

§20080. SWRCB - General Requirements. (C15: §2510)

(a) **Scope**—The regulations in this subdivision that are promulgated by the State Water Resources Control Board (**SWRCB**) pertain to water quality aspects of discharges of solid waste to land for treatment, storage, or disposal. The SWRCB-promulgated regulations in this subdivision establish waste and site classifications and waste management requirements for solid waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment units. Requirements in the SWRCB-promulgated portions of this subdivision:

- (1) **Minimum standards**—are minimum standards for proper management of each waste category. Regional boards may impose more stringent requirements to accommodate regional and site specific conditions;
- (2) **MSW Landfill Requirements**—as they apply to MSW landfills, are superseded by any more stringent requirements in SWRCB Resolution No. 93-62 (Section 2908, Title 23 of this code) or in the federal MSW regulations (40CFR258);
- (3) **Utilize Abbreviated Internal References**—make reference only to requirements of the sections within this subdivision, unless otherwise stated. Under this internal reference convention: (A) any unenumerated paragraph reference in this division [*e.g.*, “&(c),” or “&(d)(2)(A-D)” (*i.e.*, *subsections A through D, inclusive*)] is to be found in the same section as the referring subsection; and (B) any enumerated reference that does not explicitly identify a source outside this subdivision [*e.g.*, “§20200”, “§20220(b),” or “Article 2, Subchapter 3, Chapter 3”] is to be found in this subdivision; and
- (4) **Contain Nonregulatory Notes and Examples**—contain some nonregulatory language that is needed in a body of multi-agency regulations such as this in order to improve clarity and continuity. Such non-regulatory language is always italicized, is always set off from adjacent regulatory text by parentheses or brackets, serves an obviously explanatory function, and typically begins with either “*Note:*” or “*e.g.*,”. In the SWRCB-promulgated sections of this subdivision, such italicized notes and examples are intended only to provide the reader with useful guidance, and do not constitute standards having regulatory effect.

(b) **Engineered Alternatives Allowed**—Unless otherwise specified, alternatives to construction or prescriptive standards contained in the SWRCB-promulgated regulations of this subdivision may be considered. Alternatives shall only be approved where the discharger demonstrates that:

- (1) the construction or prescriptive standard is not feasible as provided in &(c); and
- (2) there is a specific engineered alternative that:
 - (A) is consistent with the performance goal addressed by the particular construction or prescriptive standard; and
 - (B) affords equivalent protection against water quality impairment.

(c) **Demonstration [for &(b)]**—To establish that compliance with prescriptive standards in this subdivision is not feasible for the purposes of &(b), the discharger shall demonstrate that compliance with a prescriptive standard either:

- (1) is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives which meet the criteria in &(b); or
 - (2) is impractical and will not promote attainment of applicable performance standards.
- The RWQCB shall consider all relevant technical and economic factors including, but not limited to, present and projected costs of compliance, potential costs for remedial action

in the event that waste or leachate is released to the environment, and the extent to which ground water resources could be affected.

(d) **Existing & New Units**—Units which were operating, or had received all permits necessary for construction and operation, on or before November 27, 1984, are designated as “existing” Units. This includes disposal sites classified under previous regulations and unclassified Units. Dischargers shall continue to operate existing Units under existing classifications and WDRs until those classifications and requirements are reviewed in accordance with §21720(c). Existing Units shall be closed and maintained after closure according to Subchapter 5, Chapter 3 of this subdivision (§20950 et seq.). All other Units (including expansions and reconstructions of existing Units initiated after November 27, 1984) are “new” Units. For discharges at new Units, the discharger shall comply with all applicable provisions of this division, as summarized in Table 3.1 [of Article 3, Subchapter 2, Chapter 3 of this subdivision] and in §20310(d). Pending review and reclassification, the following SWRCB-promulgated provisions of this division shall apply to existing Units:

- (1) except with regard to Units which were closed, abandoned, or inactive on or before November 27, 1984 [such Units are addressed separately, under &(g)], all dischargers are required to be in compliance with the monitoring program requirements [in Article 1, Subchapter 3, Chapter 3, Subdivision 1 of this division (§20380 et seq.)];
- (2) dischargers may be required to submit additional technical and monitoring reports to the RWQCB as determined to be necessary on a case by case basis.

(e) **Reclassification**—In reviewing WDRs for existing Units, the RWQCB shall consider the results of monitoring programs developed under &(d)(1) and technical and monitoring reports submitted under &(d)(2). Existing Units shall be reclassified according to the geologic siting criteria in Article 3, Subchapter 2, Chapter 3, Subdivision 1 of this division (§20240 et seq., as summarized in Table 3.1 of that article) and shall be required to comply with applicable SWRCB-promulgated construction standards in Article 4, Subchapter 2, Chapter 3, Subdivision 1 of this division [as summarized in §20310(d)] as feasible. To establish that retrofitting is not feasible, the discharger shall be required to make the demonstrations in &(b) and &(c).

(f) **WDRs Implement Regulations**—The RWQCB shall implement the SWRCB-promulgated regulations in this subtitle through the issuance of WDRs for Units.

(g) **CAI Units**—Persons responsible for discharges at Units which were closed, abandoned, or inactive on or before November 27, 1984 (**CAI Units**), may be required to develop and implement a detection monitoring program in accordance with Article 1, Subchapter 3, Chapter 3, Subdivision 1 of this division (§20380 et seq.). If water quality impairment is found, such persons may be required to develop and implement a corrective action program under that article.

(h) **Mining Waste**—Discharges of mining waste, as defined in §22470(a), shall be regulated only by the provisions of Article 1, Subchapter 1, Chapter 7, Subdivision 1 of this division (§22470 et seq.) and by such provisions of the other portions of this subdivision as are specifically referenced in that article.

(i) **Combined SWRCB/CIWMB Solid Waste Landfill Regulations**—The California Integrated Waste Management Board (**CIWMB**) and the SWRCB have promulgated the combined regulations contained in this division. For clarity, in moving the modified sections from their former location (in Chapter 15, Division 3, Title 23 of this code):

- (1) **Section Title Coding**—the title of each SWRCB-promulgated section in the combined regulations begins with “SWRCB - ” and ends with the section number (in parentheses) that section had in Title 23 — *e.g., the notation “(C-15: §2540)” following the section title signifies that the subject section is derived from §2540, Chapter 15, Division 3, Title 23 of this code, as that chapter existed prior to July 18, 1997*; and
- (2) **Paragraph Subtitles**—subtitles have been added at the beginning of many paragraphs, to assist the reader in quickly finding specific portions of the SWRCB’s requirements that address a particular issue.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13142, 13260 and 13263, Water Code.

§20164. Combined CIWMB & SWRCB Technical Definitions. [CIWMB T14:§17225.1-17225.74,§17258.2, 17761,18200.1, 18251,18011,18231,18281 // SWRCB C15: §2601]

[Note: This section contains the SWRCB’s and the CIWMB’s technical definitions, combined and listed in alphabetical order. Each agency is responsible for adopting its own definitions within this combined listing. Those terms in this section that are followed by “(CIWMB)” are adopted by the CIWMB; those followed by “(SWRCB)” are adopted by the SWRCB. Unless otherwise stated in a given regulation, it is the intent of the SWRCB and CIWMB that each agency’s definitions function for the other agency (e.g., when the CIWMB uses a term adopted by the SWRCB, or vice versa, the term has the same meaning as defined by the agency that adopted the term).]

“**Abandoned site**” (CIWMB) means a site where there is no responsible party.

“**Acceptance for filing**” (CIWMB) means the enforcement agency has determined that the application package is complete and correct and the specified permit action time frames contained in Chapter 4 of this subdivision commence.

“**Active**” (CIWMB) for CIWMB promulgated sections means the period when waste is being accepted for disposal at a disposal site.

“**Active life**” or “**operating life**” (SWRCB) means the period during which wastes are being discharged to a waste management unit. The active life continues until final closure of the waste management unit has been initiated pursuant to this subdivision. For surface impoundments, the active life includes any time when the impoundment contains liquid, including waste and leachate.

“**Affected medium**” (SWRCB) means any natural medium that consists of or contains waters of the state (*e.g., ground water, surface water, or the unsaturated zone*) that has been affected by a release from a waste management unit.

“**Alternative Daily Cover**” (CIWMB) see “cover material”.

“**Approved closure plan**” (SWRCB) means the portion of a waste management unit’s (Unit’s) final closure and post-closure maintenance plan that describes all actions necessary to prepare the Unit for post-closure maintenance, and that has been approved by the RWQCB and by any other state and local agencies having purview over that plan.

“**Aquifer**” (SWRCB) means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

“**Attitude**” (SWRCB) means either the orientation in space of a geologic structural feature or the structural element position of a geologic bed, stratum, fracture, or surface relative to the horizontal.

“Background” (SWRCB) means the concentrations or measures of constituents or indicator parameters in water or soil that has not been affected by waste constituents or leachate from the waste management unit being monitored.

“Background Monitoring Point” (SWRCB) (as capitalized) means a well, device, or location specified in the waste discharge requirements at which monitoring for background water quality or background soil quality is conducted.

“Background plot” (SWRCB) means an area adjacent to a land treatment unit that can reasonably be expected to have the same, or similar soil conditions as were present at the land treatment unit prior to discharges of waste.

“Bench” (CIWMB) means a terrace or comparatively level platform breaking the continuity of a slope.

“Best management practice(s)” (SWRCB) means a practice, or combination of practices, that is the most effective and feasible means of controlling pollution generated by nonpoint sources for the attainment of water quality objectives.

“CAI Units” (SWRCB) means waste management units that were closed, abandoned, or inactive prior to November 27, 1984.

“Capillary force(s)” (SWRCB) means the adhesive force between liquids and solids which, in the case of ground water hydrology, causes soil pore liquid to move in response to differences in matric potential. This effect causes ground water to rise from a saturated zone into the unsaturated zone, thereby creating a capillary fringe.

“Cell” (CIWMB) means that portion of compacted solid wastes in a landfill that is enclosed by natural soil or cover material during a designated period.

“Certified Engineering Geologist” (CIWMB) means a registered geologist, certified by the State of California, pursuant to section 7842 of the Business and Professions Code.

“CIWMB” (CIWMB) means the California Integrated Waste Management Board, which is the lead agency for implementing the State municipal solid waste permit program that is deemed to be adequate by US EPA under regulations published pursuant to sections 2002 and 4005 of RCRA.

“Classified waste management unit” or **“classified Unit”** (SWRCB) means a waste management unit (as defined in this section) that has been classified by a Regional Water Quality Control Board according to the provisions of Article 3 Subchapter 2, Chapter 3 of this division (§20240 et seq.).

“Classified Unit” — see “classified waste management unit” or “classified Unit”

“CLGB” — see “concentration limit”

“Closed Site” (CIWMB) means a disposal site that has ceased accepting waste and was closed in accordance with applicable statutes, regulations, and local ordinances in effect at the time.

“Closure” (SWRCB) means the process during which a waste management unit (Unit), or portion thereof, that is no longer receiving waste, is undergoing all operations necessary to prepare the Unit (or portion thereof, as appropriate) for post-closure maintenance in accordance with an approved plan for closure, or partial final closure as appropriate.

“COC” or **“COCs”** — see “Constituents Of Concern”

“Coefficient of variation” (SWRCB) means the standard deviation divided by the mean. It is a statistical measure of the dispersion of individual samples relative to the mean value of the samples.

“Collection” (CIWMB) means the act of collecting solid waste at the place of waste generation by an approved collection agent (public or private) and is distinguished from "removal."

“Commercial Solid Wastes” (CIWMB) include all types of solid wastes generated by stores, offices and other commercial sources, excluding residences, and excluding industrial wastes.

“Concentration limit” (SWRCB) means the value for a constituent specified in the water quality protection standard under §20390 and §20400, including but not limited to values for concentration, temperature, pH, conductivity, and resistivity. The term can apply to a concentration that exceeds the constituent’s background concentration [i.e., a “concentration limit greater than background (CLGB)” (SWRCB) as described under §20400].

“Concentration limit greater than background (CLGB)” — see “concentration limit”

“Constituent” (SWRCB) means an element or compound which occurs in or is likely to be derived from waste discharged to the waste management unit.

“Constituent(s) of concern” or **“COC(s)”** (SWRCB) means any waste constituent(s), reaction product(s), and hazardous constituent(s) that is reasonably expected to be in or derived from waste contained in a waste management unit.

“Construction and Demolition Wastes” (CIWMB) include the waste building materials, packaging and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings and other structures.

“Construction quality assurance” or **“CQA”** (SWRCB) means a planned system of activities that provides assurance that the facility, or component thereof, is constructed as specified in the approved design. As used in these regulations, the term includes **“Construction quality control”** or **“CQC”**, a planned system of inspections that is used to directly monitor and control the quality of a construction project.

“Containment” (SWRCB) means the use of waste management unit characteristics or installed systems and structures to prevent or restrict the release of waste constituents, including waste constituents mobilized as a component of leachate or of landfill gas.

“Containment feature” (SWRCB) means any feature, whether natural or artificial, used to contain waste constituents, including waste constituents mobilized as a component of leachate or of landfill gas.

“Containment structure” (SWRCB) means an artificial feature designed and installed to contain waste constituents, including waste constituents mobilized as a component of leachate or of landfill gas.

“Contaminated materials” (SWRCB) means materials that contain waste constituents or leachate.

“Control chart” (SWRCB) means a graphical method for evaluating whether a process is or is not in a state of statistical control.

“Coverage” (SWRCB), when applied to financial assurance, means the amount of funds the discharger must make available for a known eventuality (e.g., closure) or potential eventuality (e.g., corrective action).

“Cover Material” (CIWMB) means soils/earthen materials or alternative materials used in covering compacted solid wastes in a disposal site. Cover material may serve as daily, intermediate or final cover. **“Alternative Daily Cover”** (CIWMB) means cover

material other than at least six inches of earthen material, placed on the surface of the active face at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. **“Daily Cover Material”** (CIWMB) includes that cover material placed on the entire surface of the active face at least at the end of each operating day in order to control vectors, fire, odors, blowing litter and scavenging. **“Final Cover Material”** (CIWMB) means cover material that represents the permanently exposed final surface of a fill. **“Intermediate Cover Material”** (CIWMB) means cover material placed on all fill surfaces where additional cells are not to be constructed for 180 days or more to control vectors, fires, odors, blowing litter, scavenging, and drainage. Intermediate cover does not include final cover as defined in this section.

“CQA” — see “construction quality assurance”

“CQC” — refer to “construction quality assurance”

“Critical Slope” (SWRCB) means a potential slip surface or slope on a site that has the lowest factor of safety.

“Cross contamination” (SWRCB) means a condition created when a drill hole, boring, or improperly constructed well forms a pathway for fluid movement between a saturated zone which contains pollutants and a formerly separated saturated zone containing uncontaminated ground water.

“Cutoff wall” (SWRCB) means a subsurface barrier to lateral fluid movement which extends from in place natural geologic materials (which have the required hydraulic conductivity) to ground surface.

“Day” (CIWMB) means calendar day unless otherwise specified.

“Decomposable waste” (SWRCB) means waste which, under suitable natural conditions, can be transformed through biological and chemical processes into compounds which do not impair the quality of waters of the state. Nevertheless, incomplete decomposition may result in some water quality degradation (*e.g., hardness, taste, odor, etc.*).

“Decomposition Gases” (CIWMB) include gases produced by chemical or microbial activity during the decomposition of solid waste.

“Dedicated” (SWRCB), when applied to a waste management unit (Unit), means the Unit is used exclusively for discharges of particular wastes.

“Dendritic” (SWRCB) when applied to a waste management unit’s subdrain system, means that this system is arranged in a branching pattern.

“Designated waste” (SWRCB) has the same meaning as under California Water Code §13173.

“Discharger” (SWRCB) means any person who discharges waste which could affect the quality of waters of the state, and includes any person who owns a waste management unit (Unit) or who is responsible for the operation of a Unit. When referring to dischargers of hazardous waste, the terms "discharge" and "waste" in this definition have the same meaning as they would have under the definitions for these terms provided in section 66260.10 of Chapter 11 of Division 4.5 of Title 22, CCR, effective July 1, 1991.

“Discrete unit” (CIWMB) means any portion of the disposal area that can be individually described.

“Disposal Area” (CIWMB) [CIWMB usage] means that portion of a disposal site which has received or is receiving solid wastes.

“Dump” (CIWMB) means a disposal site which has waste exposed to the elements, vectors and scavengers.

“EA” (CIWMB) means enforcement agency as defined in PRC §40130.

“Earthquake Magnitude” (CIWMB) means the Richter scale of earthquake magnitude used to express the total energy of an earthquake.

“Electrical conductivity” (SWRCB) means the relative ability of water to conduct electrical current. It depends on the ion concentration of, and can be used to approximate the total filterable residue (total dissolved solids) in, the water.

“Environmental Control System” (CIWMB) means a system to prevent the release of waste constituents from the containment structures of sites. Environmental control system for the purpose of this definition does not include systems which primary function is to protect water quality.

“Excess exposure” (SWRCB) means that, for an organism exposed to a release from a waste management unit, the combined effect of all hazardous constituents in the organism's environment is such that the organism will suffer some measurable adverse effect on health or reproductive success, which effect is partly or wholly attributable to the release.

“Existing” (SWRCB), when describing a waste management unit (*e.g.*, “*existing surface impoundment*”, or “*existing Unit*”), means that the waste management unit in question was operating, or had received all permits necessary for construction and operation, on or before November 27, 1984, pursuant to §20080(d).

“Existing Footprint” (SWRCB) (as capitalized) means the area of land, at an MSW landfill, that is covered by waste as of the date that landfill became subject to the federal regulations of 40 CFR Part 258, pursuant to §258.1 of that part, as published in the Federal Register of October 1, 1993 (Volume 58, No. 189, pages 51546 and 51547).

[*Note: see also definitions for “Federal Deadline” and “MSW landfill”.*]

“Existing MSWLF unit” (CIWMB) means any municipal solid waste landfill unit that is receiving solid waste as of the appropriate dates specified in Section 20060. Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management.

“External hydrogeologic forces” (SWRCB) means seasonal and other fluctuations in ground water levels, and any other hydraulic condition which could cause a change in the hydraulic stress on a containment structure.

“Facility” — see “waste management facility”

“Facility Boundary” (CIWMB) means the boundary surrounding the entire area on which solid waste facility activities occur and are permitted.

“Facility wastewater” (SWRCB) means all wastewater, from whatever source, produced at a confined animal facility.

“Factor of safety” (SWRCB) means the ratio of forces resisting slope or foundation failure over forces driving slope or foundation failure.

“Federal Deadline” (SWRCB) applies only to an MSW landfill, and means the compliance date applicable to that landfill or portion thereof pursuant to §258.1(e) of the federal MSW regulations (40CFR258), as revised in the Federal Register of October 1, 1993 (Volume 58, No. 189, pages 51546 and 51547). The term does not mean the date an MSW landfill must begin monitoring, in that all waste management units subject to these

regulations have been required to monitor since the November 27, 1984 version of these regulations (see §20380 et seq.).

“**Fill**” (CIWMB) includes compacted solid waste and cover material.

“**Flexible membrane liner (FML)**” — see “geosynthetic(s)”

“**Floodplain**” (SWRCB) means the land area which is subject to flooding in any year from any source.

“**FML**” — see “geosynthetic(s)”

“**Foundation Failure**” (CIWMB) means the failure of a foundation, soil or rock that serves to support an imposed load, along a surface of weakness.

“**Free liquid**” (SWRCB) means liquid which readily separates from the solid portions of waste under ambient temperature and pressure. Free liquids are not present when a 100 milliliter representative sample of the waste can be completely retained in a standard 400 micron conical paint filter for 5 minutes without loss of any portion of the waste from the bottom of the filter (or an equivalent test approved by the Department of Toxic Substances Control).

“**Garbage**” (CIWMB) includes all kitchen and table food waste, and animal or vegetable waste that attends or results from the storage, preparation, cooking or handling of food stuffs.

“**Geologic materials**” (SWRCB) means in place naturally occurring surface and subsurface rock and soil.

“**Geologist**” (CIWMB) means a person who is engaged in professional geological work under the supervision of registered geologist or registered civil engineer, who is in responsible charge of the work, pursuant to section 7805 of the Business and Professions Code.

“**Geomembrane**” — see “geosynthetic(s)”

“**Geosynthetic(s)**” (SWRCB) (n) means flexible materials in planar form manufactured to meet specific engineering purposes. The term includes, but is not limited to:

“**geomembrane**”, an essentially impermeable membrane used as a barrier to waste solids and fluids, and synonymous with “**synthetic liner**” and “**flexible membrane liner (FML)**”; “**geocomposite liner (GCL)**,” a manufactured material using geotextiles, geogrids, geonets, and/or geomembranes in laminated or composite form; “**geotextile**” (including “**geonet**”), any permeable textile used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a constructed project, structure, or system.

“**Ground acceleration**” (SWRCB) means acceleration of earth particles caused by an earthquake.

“**Ground rupture**” (SWRCB) means disruption of the ground surface due to natural or man made forces (e.g., faulting, landslides, subsidence).

“**Ground water**” (SWRCB) for the purpose of the SWRCB-promulgated requirements of this subtitle, means water below the land surface that is at or above atmospheric pressure.

“**Grout curtain**” (SWRCB) means a subsurface barrier to fluid movement, installed by injecting grout mixtures (such as cement, silicates, synthetic resins, etc.) to fill and seal fractures in rock.

“**Hazardous constituent**” (SWRCB) means a constituent identified in Appendix VIII to Chapter 11 of Division 4.5 of Title 22, CCR, or an element, chemical compound, or

mixture of compounds which is a component of a waste or leachate and which has a physical or chemical property that causes the waste or leachate to be identified as a hazardous waste by the California Department of Toxic Substances Control.

“Hazardous waste” (SWRCB) means any waste which, under Article 1, Chapter 11, Division 4.5 (§66261.3 et seq.) of Title 22 of this code, is required to be managed according to Division 4.5 of Title 22 of this code.

“Head” or **“hydraulic head”** (SWRCB) means the pressure exerted by fluid on a given area. It is caused by the height of the fluid surface above the area.

“Holding facilities” (CIWMB) means sedimentation basins/ponds designed to control suspended solids entrained in surface run-off, prior to discharge.

“Holocene fault” (SWRCB) means a fault which is or has been active during the last 11,000 years.

“Hydraulic conductivity” (SWRCB) means the ability of natural and artificial materials to transmit fluid. For water, including aqueous solutions, the term is expressed as a measure of the rate of flow (e.g., cubic centimeters per second) one can expect through a unit-area (e.g., one square centimeter) cross section of the material when the hydraulic gradient is unity (e.g., one centimeter of head loss per centimeter of travel through the material). The resulting numerical value is expressed in velocity units (e.g., centimeters per second).

“Inactive” (SWRCB) means a temporary status of a waste management unit (Unit), following the initial receipt of waste, in which the Unit is no longer receiving waste.

“Inactive Site” (CIWMB) means a site that is temporarily idle for a specific period due to known circumstances and not part of the normal operation pattern contained in the solid waste facility permit.

“Independent sample” (SWRCB) means an individual sample of a monitored medium, obtained from a given Monitoring Point, that:

- (1) does not contain a parcel of the medium that has been previously sampled at that Monitoring Point sufficient to cause a measurable effect in the analytical results; and
- (2) has not been otherwise affected differently than any other individual sample or group of samples with which it will be compared. In applying No. 1, above, to ground water monitoring, the parcel of water of interest is the parcel of water that was in the well bore at the time of any previous sampling event.

“Indicator parameters” (SWRCB) means measurable physical or chemical characteristics of water or soil pore moisture which are used to detect the presence of waste constituents in water or soil pore moisture, or the effects of waste constituents on waters of the state.

“Inert waste” (SWRCB) means the same as under §20230(a).

“Interim cover” (SWRCB) means the same as under §20705(a).

“Intermediate cover” (SWRCB), when used in an SWRCB-promulgated requirement applicable to a waste pile waste management unit, has a meaning identical to the CIWMB’s definition of the term as it applies to landfills (*under the definition for “cover material” in this section*).

“Iso-settlement map” (SWRCB) means a contour map showing lines of equal settlement of a landfill over a period of time.

“Landfill” (SWRCB) means a waste management unit at which waste is discharged in or on land for disposal. It does not include surface impoundment, waste pile, land treatment unit, injection well, or soil amendments. *[Note: see also the definition of “waste management unit” and §§20090(c&f).]*

“Landfill gas condensate” (SWRCB) means liquids which are removed from a gas control system at a landfill and which are produced by the condensation of landfill gas being conveyed by that system. The term ceases to apply to such liquid upon its being treated to the extent that it no longer contains any constituent of concern whose concentration exceeds the water quality objectives of ground water in the uppermost aquifer underlying the waste management unit. *[Note: see also §20200(d).]*

“Lateral expansion (beyond Existing Footprint)” (SWRCB) applies only to an existing MSW landfill that is subject to the federal regulations under 40 CFR 258, and means any portion of the landfill which—in map view—is contiguous with the landfill's Existing Footprint (as defined in this section) and which receives waste after the landfill's Federal Deadline (as defined in this section).

“Lateral expansion (of RWQCB-Permitted Area)” (SWRCB), for any new or existing waste management unit (Unit), means any increase in map view of the Unit's RWQCB-Permitted Area (as defined in this section)

“LCRS” — see “leachate collection and removal system”

“Leachate” (SWRCB) means any liquid formed by the drainage of liquids from waste or by the percolation or flow of liquid through waste. It includes any constituents extracted from the waste and dissolved or suspended in the fluid. The term ceases to apply to such liquid upon its being mingled with ground water outside the Unit's liner system. The term also ceases to apply to such liquid upon its being treated to the extent that it no longer contains any constituent of concern whose concentration exceeds the water quality objectives of ground water in the uppermost aquifer underlying the waste management unit.

“Leachate collection and removal system” or **“LCRS”** (SWRCB) means that portion of a waste management unit's containment system that is designed and constructed (pursuant to §20340) to collect all leachate that reaches it, and to convey such leachate to a designated collection area to minimize the buildup of leachate head on any underlying liner. The term does not include systems that are designed to collect ground water outside the Unit's liner, if any, including ground water that has been polluted by leachate.

“Liner” (SWRCB) means a continuous layer of natural or artificial material, or a continuous membrane of flexible artificial material, or a continuous composite layer consisting of a membrane of flexible artificial material directly overlying a layer of engineered natural material, which is installed beneath or on the sides of a waste management unit (Unit), and which acts as a barrier to both vertical or lateral fluid movement.

“Liner system” (SWRCB) means the entire sequence of individual liners, composite liners, and leachate collection system(s) which prevent or minimize releases from the waste management unit.

“Liquefaction” (SWRCB) means the process resulting from seismic or other shaking whereby solid granular material takes on the flowing characteristics of a liquid.

“Liquid waste” (SWRCB) means any waste materials which are not spadable.

“Local Air District” (CIWMB) means the local Air Quality Management District (AQMD) or the local Air Pollution Control District (APCD).

“Local Government” (CIWMB) is a local public entity which is a county, city, district, or any other special political subdivision, but is not the State.

“Maximum credible earthquake”, or **“MCE”** (SWRCB), means the maximum earthquake that appears capable of occurring under the presently known geologic framework. In determining the maximum credible earthquake, little regard is given to its probability of occurrence except that its likelihood of occurring is great enough to be of concern. The term describes an event that could be approached more frequently in one geologic environment than in another; therefore, the following factors have a bearing upon the derivation of the MCE for any given facility:

- (a) the seismic history of the vicinity and of the geologic province;
- (b) the length of the significant fault or faults which can affect the site within a radius of 62 miles (100 kilometers) of the facility boundary;
- (c) the type(s) of faults involved;
- (d) the tectonic and/or structural history; and
- (e) the tectonic and/or structural pattern or regional setting (geologic framework); nevertheless
- (f) the time factor shall not be a parameter.

“Maximum probable earthquake”, or **“MPE”** (SWRCB), means the maximum earthquake that is likely to occur during a 100 year interval. The term describes a probable occurrence, rather than an assured event that will occur at a specific time; therefore, the following factors have a bearing upon the derivation of the MPE for a given facility:

- (a) the regional seismicity, considering the known past seismic activity;
- (b) the fault or faults within a 62 mile (100 kilometer) radius from the facility boundary that may be active within the 100 years following first acceptance of waste;
- (c) the type(s) of faults considered;
- (d) the seismic recurrence factor for the area described in &(b), above, and for any faults (when known) within that area; and
- (e) the mathematic probability analysis (or statistical analysis) of seismic activity associated with the faults included in the area described under &(b), above, including a graphical plot of recurrence information. Nevertheless, the postulated magnitude of the MPE is superseded by any more powerful seismic event that has occurred within historic time in the area described under &(b), above.

“Measurably significant” (SWRCB) means a change in the Monitoring Point data that, relative to the reference background value (or other approved reference value or distribution), is sufficient to indicate that a release has occurred, pursuant to the applicable data analysis method (including its corresponding trigger).

“Moisture holding capacity” (SWRCB) means the amount of liquid which can be held against gravity by waste materials without generating free liquid.

“Monitoring parameter” (SWRCB) means one of the set of parameters specified in the waste discharge requirements for which monitoring is conducted. Monitoring parameters include physical parameters, waste constituents, reaction products, and hazardous constituents, that provide a reliable indication of a release from a waste management unit.

“Monitoring Point” (SWRCB) (as capitalized) means a well, device, or location specified in the waste discharge requirements at which monitoring is conducted and at which the water quality protection standard, under §20390, applies.

“MSW landfill” or **“municipal solid waste landfill unit”** (SWRCB) means any landfill that is subject to the federal regulations of 40CFR258, including any portion of a disposal site that is subject to those regulations. The term includes any landfill, other than a Class I landfill, that received municipal solid waste (**MSW**) at any time and that has received any solid waste since October 9, 1991; therefore, the term does not include any landfill that stopped receiving waste prior to that date.

“Municipal solid waste,” or **“MSW”** (SWRCB) has the same meaning as under 40 CFR Part 258.

“New Unit” (SWRCB), when applied to a waste management unit (**Unit**) or portion thereof, means that the Unit (or portion thereof) began operating, or had received all permits necessary for construction and operation, after November 27, 1984, pursuant to §20080(d).

“New MSWLF unit” (CIWMB) means any municipal solid waste landfill unit that has not received waste prior to the operative date of October 9, 1993, or prior to October 9, 1997 if the MSWLF unit meets the conditions of 40 CFR 258.1(f)(1).

“Nonhazardous solid waste” (SWRCB) has the same meaning as under §20220(a).

“Nuisance” (SWRCB) has the same meaning as under Water Code §13050(m).

“Operating” (CIWMB) means currently active or the period of site activity from the first receipt of waste until the final receipt of waste consistent with the normal pattern of operation in the solid waste facility permit.

“Operating” (SWRCB) — see “active life”

“Operating Area” (CIWMB) means that portion of a solid waste facility which is currently in use for the unloading, management or disposal of wastes.

“Operating life” — see “active life”

“Partial Final Closure” (CIWMB) means the closure of discrete units of a site consistent with the approved closure and postclosure maintenance plan.

“Peak stream flow” (SWRCB) means the maximum expected flow of surface water at a waste management facility from a tributary watershed for a given recurrence interval.

“Perched ground water” (SWRCB) means a body of unconfined ground water separated from the zone of saturation by a portion of the unsaturated zone. Such perched water can be either permanent or ephemeral.

“Permeability”(SWRCB) means the ability of natural and artificial materials to transmit fluid.

“Physical parameter”(SWRCB) means any measurable physical characteristic of a substance including, but not limited to, temperature, electrical conductivity, pH, and specific gravity.

“Point of Compliance” (SWRCB) (as capitalized) means a vertical surface located at the hydraulically downgradient limit of a waste management unit (Unit) and that extends through the uppermost aquifer underlying the Unit.

“Post closure maintenance” (SWRCB) means all activities undertaken at a closed waste management unit to maintain the integrity of containment features and to monitor compliance with applicable performance standards.

“Post closure maintenance period” (SWRCB) means the period after closure of a waste management unit (Unit) during which the waste in the Unit could have an adverse effect on the quality of the waters of the state.

“Probable maximum precipitation” (SWRCB) means the estimated amount of precipitation for a given duration, drainage area, and time of year, which approaches and approximates the maximum that is physically possible within the limits of contemporary hydrometeorological knowledge and techniques. The term describes a precipitation event that has virtually no risk of being exceeded.

“P value” (SWRCB) means the smallest significance level for which the null hypothesis would be rejected, based on the data that was actually observed.

“Rapid geologic change” (SWRCB) means alteration of the ground surface through such actions as landslides, subsidence, liquefaction, and faulting.

“R Chart (range chart)” (SWRCB) means a control chart for evaluating the variability within a process in terms of the subgroup range R.

“Reconstruction” (SWRCB) means modification to an existing waste management unit (Unit) which entails costs amounting to 50 percent or more of the initial cost of the Unit.

“Regional Water Quality Control Board” — see “RWQCB”

“Registered Civil Engineer” (CIWMB) means a civil engineer registered by the State of California, pursuant to section 6762 of the Business and Professions Code.

“Registered Geologist” (CIWMB) means a geologist registered by the State of California, pursuant to section 7842 of the Business and Professions Code.

“Regulated Hazardous Waste” (CIWMB) means a hazardous waste, as defined in §66260.10 of Division 4.5 of Title 22 of this code.

“Relative compaction” (SWRCB) means the degree of compaction achieved, as a percentage of the laboratory compaction, in accordance with accepted civil engineering practices.

“Run-off” (SWRCB) means any precipitation, leachate, or other liquid that drains from any part of a waste management unit (Unit).

“Run-on” (SWRCB) means any precipitation or other liquid that drains onto any part of a waste management unit.

“RWQCB” or **“Regional Water Quality Control Board” (RWQCB)** has the same meaning as does the latter term, as described under Division 7 of the California Water Code.

“RWQCB-Permitted Area” (SWRCB) (as capitalized) means the portion of land designated in WDRs for the discharge of waste at a waste management unit.

“Saturated zone” (SWRCB) means an underground zone in which all openings in and between natural geologic materials are filled with water.

“Semi solid waste” (SWRCB) means waste containing less than 50 percent solids.

“Sensitive biological receptor of concern” (SWRCB) means a member of any species of organism whose members are likely to be exposed to a release from a waste management unit and experience some measurable adverse effect as a result of that exposure.

“Slope Failure” (SWRCB) means the downward and outward movement of ground slopes (e.g., natural rock, soils, artificial fills, or continuations of these materials).

“Sludge” (SWRCB) means residual solids and semi solids from the treatment of water, wastewater, and other liquids. It does not include liquid effluent discharged from such treatment processes.

“Soil Engineer” (CIWMB) is synonymous with geotechnical engineer; means a registered civil engineer that is qualified to use the title of "soil engineer," pursuant to California Code of Regulations, Title 16, section 426.50.

“Soil pore liquid” (SWRCB) means the liquid contained in openings between particles of soil in the unsaturated zone.

“Sorbent” (SWRCB) means a substance which takes up and holds a liquid either by absorption or adsorption.

“State Water Resources Control Board” — see “SWRCB”

“Static Conditions” (SWRCB) means under conditions of no external motions or forces, such as those of earthquakes.

“Statistically significant” (SWRCB) means a statistical test has a p value that is small enough for the null hypothesis to be rejected.

“Storage” (SWRCB) means the holding of waste or recyclable materials for a temporary period, at the end of which the materials either is treated or is discharged elsewhere.

“Storm” (SWRCB) means the maximum precipitation for a given duration that is expected during the given recurrence interval [*e.g., a 24-hour (duration) 100 year (recurrence interval) storm*].

“Surface impoundment” (SWRCB) means a waste management unit which is a natural topographic depression, excavation, or diked area, which is designed to contain liquid wastes or wastes containing free liquids, and which is not an injection well.

“SWRCB” (SWRCB) means the State Water Resources Control Board, as described under Division 7 of the Water Code.

“Synthetic liner” — see “geosynthetic(s)”

“Tailings pond” (SWRCB) means an excavated or diked area which is intended to contain liquid and solid wastes from mining and milling operations.

“Trace Gases” (CIWMB) means all other organic or inorganic compounds or elements, measured at less than one percent by volume, found together with the principal gases in landfill gas, and may include vinyl chloride, benzene, hydrogen sulfide, carbon monoxide, hydrogen, mercury, etc.

“Transmissivity” (SWRCB) means the rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of the aquifer under a unit hydraulic gradient.

“Treatment” (SWRCB) means any method, technique, or process designed to change the physical, chemical, or biological characteristics of waste so as to render it less harmful to the quality of the waters of the state, safer to handle, or easier to contain or manage. The term includes use of waste as a fuel, nutrient, or soil amendment.

“Treatment zone” (SWRCB) means a soil area of the unsaturated zone of a land treatment unit within which constituents of concern are degraded, transformed, or immobilized.

“Underlying ground water” (SWRCB), for the purposes of waste management unit siting criteria, includes water which rises above the zone of saturation due to capillary forces.

“Unit” — see “waste management unit”

“Unsaturated zone” (SWRCB) means the zone between the ground surface and the regional water table or, in cases where the uppermost aquifer is confined, the zone between the ground surface and the top of the saturated portion of the aquifer’s confining layer.

“Unstable Areas” (CIWMB) means locations susceptible to natural or human induced events or forces which are capable of rupturing the site containment structure.

“Uppermost aquifer” (SWRCB) means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer.

“Vector” (CIWMB) includes any insect or other arthropod, rodent, or other animal capable of transmitting the causative agents of human disease, or disrupting the normal enjoyment of life by adversely affecting the public health and well being.

“Waste constituent” (SWRCB) means a constituent that is reasonably expected to be in or derived from waste contained in a waste management unit.

“Waste management facility” or **“facility”** (SWRCB) means the entire parcel of property at which waste discharge operations are conducted. Such a facility may include one or more waste management units.

“Waste management unit” or **“Unit”** (SWRCB) (the latter capitalized or in quotes at the beginning of a sentence) means an area of land, or a portion of a waste management facility, at which waste is discharged. The term includes containment features and ancillary features for precipitation and ainage control and for monitoring.

“Waste pile” (SWRCB) means a waste management unit (Unit) at which only noncontainerized, bulk, dry solid waste is discharged and piled for treatment or storage on an engineered liner system that prevents the waste from contacting the underlying land surface. The term does not include a Unit of similar construction which is used for waste disposal (such a Unit would be a landfill).

“Water quality impairment” (SWRCB) means degradation of the existing quality of a body of surface or ground water resulting from a release of waste constituents, waste-derived hazardous constituents, or reaction products, including but not limited to any incomplete decomposition product which could cause nuisance by odor.

“Water Standard” (SWRCB) (as capitalized) means the water quality protection standard under §20390.

“WDRs” (SWRCB) means waste discharge requirements.

“X Bar chart” (SWRCB) means a control chart for evaluating the process level or subgroup differences in terms of the subgroup average.

“Zone of saturation” (SWRCB) means the subsurface zone which extends downward from the base of the unsaturated zone in which the interstices are filled with water under pressure that is equal to or greater than atmospheric pressure. Although the zone can contain gas filled interstices (in which the gas pressure exceeds atmospheric pressure) or interstices filled with fluids other than water, it is still considered saturated.

Authority cited: Section 1058, Water Code, Reference: Section 13172, Water Code; Section 43103, Public Resources Code.

Authority cited: Section 40502 Public Resources Code, Reference: Sections 40000, 40001, 40002, and 43103 and Title 40, CFR 258.2.

§20200. SWRCB - Applicability and Classification Criteria. (C15: §2520)

(a) **Concept**—This article contains a waste classification system which applies to solid wastes that cannot be discharged directly or indirectly to waters of the state and which therefore must be discharged to waste management units (**Units**) for treatment, storage, or disposal in accordance with the requirements of this division. Wastes which can be discharged directly or indirectly (*e.g., by percolation*) to waters of the state under effluent or concentration limits that implement applicable water quality control plans (*e.g., municipal or industrial effluent or process wastewater*) are not subject to the SWRCB-promulgated provisions of this division. This waste classification system shall provide the basis for determining which wastes may be discharged at each class of Unit. Waste classifications are based on an assessment of the potential risk of water quality degradation associated with each category of waste.

(1) The waste classifications in this article shall determine where the waste can be discharged unless the waste does not consist of or contain municipal solid waste (**MSW**) and the discharger establishes to the satisfaction of the RWQCB that a particular waste constituent or combination of constituents presents a lower risk of water quality degradation than indicated by classification according to this article.

(2) Discharges of wastes identified in §20210 or §20220 of this article shall be permitted only at Units which have been approved and classified by the RWQCB in accordance with the criteria established in Article 3 of this subchapter, and for which WDRs have been prescribed or waived pursuant to Article 4, Subchapter 3, Chapter 4 of this subdivision (§21710 et seq.). Table 2.1 (of this article) presents a summary of discharge options for each waste category.

(b) **Dedicated Units/Cells For Certain Wastes**—The following wastes shall be discharged only at dedicated Units [or dedicated landfill cells (*e.g., ash monofill cell*)] which are designed and constructed to contain such wastes:

(1) wastes which cause corrosion or decay, or otherwise reduce or impair the integrity of containment structures;

(2) wastes which, if mixed or commingled with other wastes can produce a violent reaction (including heat, pressure, fire or explosion), can produce toxic byproducts, or can produce any reaction product(s) which:

(A) requires a higher level of containment;

(B) is a restricted waste; or

(C) impairs the integrity of containment structures.

(c) **Waste Characterization**—Dischargers shall be responsible for accurate characterization of wastes, including determinations of whether or not wastes will be compatible with containment features and other wastes at a Unit under &(b), and whether or not wastes are required to be managed as hazardous wastes under Chapter 11 of Division 4.5 of Title 22 of this code.

(d) **Management of Liquids at Landfills and Waste Piles**—The following requirements apply to discharges of liquids at Class II waste piles and at Class II and Class III landfills, except as otherwise required for MSW landfills by more-stringent state and federal requirements under SWRCB Resolution No. 93-62 (Section 2908, Title 23 of this code) (see 40CFR258.28) [*Note: see also definitions of “leachate” and “landfill gas condensate” in §20164*]:

(1) [Reserved.];

(2) wastes containing free liquids shall not be discharged to a Class II waste pile. Any waste that contains liquid in excess of the moisture holding capacity of the waste in the Class II landfill, or which contains liquid in excess of the moisture holding capacity as a result of waste management operations, compaction, or settlement shall only be discharged to a surface impoundment or to another Unit with containment features equivalent to a surface impoundment; and

(3) liquids or semi solid waste (i.e., waste containing less than 50 percent solids, by weight), other than dewatered sewage or water treatment sludge as described in §20220(c), shall not be discharged to Class III landfills. Exceptions may be granted by the RWQCB if the discharger can demonstrate that such discharge will not exceed the moisture holding capacity of the landfill, either initially or as a result of waste management operations, compaction, or settlement, so long as such discharge is not otherwise prohibited by applicable state or federal requirements.

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13172, Water Code; Section 43103, Public Resources Code.

§20220. SWRCB - Nonhazardous Solid Waste. (C15: §2523)

(a) **Definition**—Nonhazardous solid waste means all putrescible and nonputrescible solid, semi solid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi solid wastes and other discarded waste (whether of solid or semi solid consistency); provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentrations which exceed applicable water quality objectives, or could cause degradation of waters of the state (i.e., designated waste).

(b) **Units That Receive**—Except as provided in §20200(d) (for liquids), nonhazardous solid waste may be discharged at any classified landfill which is authorized to accept such waste, provided that:

(1) the discharger shall demonstrate that codisposal of nonhazardous solid waste with other waste shall not create conditions which could impair the integrity of containment features and shall not render designated waste hazardous (*e.g., by mobilizing hazardous constituents*); and

(2) the discharger shall ensure, to the maximum extent feasible, that the Unit receives only those wastes that are approved for being discharged at that Unit. [*Note: see also CIWMB §20870*]

(c) **Dewatered Sludge**—Dewatered sewage or water treatment sludge may be discharged at a Class III landfill under the following conditions, unless DTSC determines that the waste must be managed as hazardous waste:

(1) the landfill is equipped with a leachate collection and removal system (**LCRS**);

(2) the sludge contains at least 20 percent solids (by weight) if primary sludge, or at least 15 percent solids if secondary sludge, mixtures of primary and secondary sludges, or water treatment sludge; and

(3) a minimum solids to liquid ratio of 5:1 by weight shall be maintained to ensure that the codisposal will not exceed the initial moisture holding capacity of the nonhazardous solid waste. The actual ratio required by the RWQCB shall be based on site specific conditions.

(d) **Ash**—Incinerator ash may be discharged at a Class III landfill unless DTSC determines that the waste must be managed as hazardous waste.

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13172, Water Code; Section 43103, Public Resources Code.

SWRCB - Inert Waste. (C15: §2524)

(a) **Defined**—Inert waste is that subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives, and does not contain significant quantities of decomposable waste.

(b) **Units That Accept**—Inert wastes do not need to be discharged at classified Units.

(c) **WDRs Optional**—The RWQCB can prescribe individual or general WDRs

§20310. SWRCB - General Construction Criteria. (C15: §2540)

(a) Class II waste management units (**Class II “Units”**) shall be designed and constructed to prevent migration of wastes from the Units to adjacent geologic materials, ground water, or surface water, during disposal operations, closure, and the post closure maintenance period. Class II and Class III MSW landfills are also subject to any applicable waste containment system design requirements of SWRCB Resolution No. 93-62 to the extent that such requirements are more stringent than those applicable to a non-MSW Class II or Class III landfill under this subdivision.

(b) Each Class II Unit shall be designed and constructed for the containment of the specific wastes which will be discharged.

(c) Class III landfills shall have containment structures which are capable of preventing degradation of waters of the state as a result of waste discharges to the landfills if site characteristics are inadequate.

(d) For the purposes of this paragraph, the words “new” and “existing” have the same meaning as described in §20080(d). New landfills, waste piles, and surface impoundments shall comply with the requirements of this article. Existing waste piles and surface impoundments shall be fitted with liners and leachate collection and removal systems as described in §20330 and §20340 as feasible. Existing landfills and waste piles shall have interim cover as described in §20705. Existing landfills, waste piles, and surface impoundments shall be fitted with subsurface barriers as described in §20360 as needed and feasible, and shall have precipitation and drainage control facilities as described in §20365. Existing surface impoundments shall comply with §20375. New and existing land treatment units shall comply with §20377. All existing Units shall comply with the seismic design criteria in Section 20370.

(e) Containment structures shall be designed by, and construction shall be supervised and certified by, a registered civil engineer or a certified engineering geologist. Units shall receive a final inspection and approval of the construction by RWQCB or SWRCB staff before use of the Unit commences.

(f) The discharger shall maintain the integrity of containment structures in spite of normal excavation or fire control work; nevertheless, for fire control work, the discharger can damage containment structures to the extent necessary to control the fire, so long as the discharger promptly repairs such damage after extinguishing the fire. Excavations made as part of discharge operations shall not result in removal of any portion of a containment structure.

(g) **Stability Analysis** — For any portions of the Unit's containment system installed after July 18, 1997, for which the RWQCB has not approved a slope and foundation stability report on or before that date, the discharger shall meet the requirements of §21750(f)(5).

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20320. SWRCB - General Criteria for Containment Structures. (C15: §2541)

(a) **Material Properties** — Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients (including hydraulic head and external hydrogeologic forces), physical contact with the waste or leachate, chemical reactions with soil and rock, climatic conditions, the stress of installation, or because of the stress of daily operation.

(b) **Applicable Permeants** — Hydraulic conductivities specified for containment structures other than cover shall be relative to the fluids, including waste and leachate, to be contained. Hydraulic conductivities specified for final cover shall be relative to water.

(c) **Determining Hydraulic Conductivity** — Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water (*e.g., on the test pad*), shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted (*e.g., a sealed double-ring infiltrometer test on the test pad*).

(d) **Soils Used in Containment Structures** — Earthen materials used in containment structures other than cutoff walls and grout curtains shall consist of a mixture of clay and other suitable fine grained soils which have the following characteristics, and which, in combination, can be compacted to attain the required hydraulic conductivity when installed. Liners made of such materials are referred to as "clay liners" in this subchapter.

(1) At least 30 percent of the material, by weight, shall pass a No. 200 U.S. Standard sieve.

(2) The materials shall be fine grained soils with a significant clay content and without organic matter, and which is a clayey sand, clay, sandy or silty clay, or sandy clay under a soil classification system having industry-wide use [*e.g., the "SC", "CL", or "CH" soil classes under ASTM Designation: A2487-93 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)*].

(e) **Synopses** — Construction standards for waste management units other than land treatment are given on Table 4.1 and in Figure 4.1.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20323. SWRCB - CQA Plan. (new)

After July 18, 1997, the RWQCB shall require construction for all liner systems and final cover systems to be carried out in accordance with a CQA plan certified by an appropriately registered professional to satisfy the requirements of §20324. If the

RWQCB finds that any construction of the liner system or final cover system was undertaken in the absence of a CQA plan that satisfies the requirements of §20324, the RWQCB shall require the discharger to undertake any corrective construction needed to achieve such compliance.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20324. SWRCB - CQA Requirements. (T14: §17774)

(a) **Performance Standard** — The construction quality assurance (CQA) program, including all relevant aspects of construction quality control (CQC), shall provide evidence that materials and procedures utilized in the placement of the any containment feature at a waste management unit (Unit) will be tested and monitored to assure the structure is constructed in accordance with the design specifications approved by the RWQCB.

(b) **Professional Qualifications.**

- (1) The design professional who prepares the CQA plan shall be a registered civil engineer or certified engineering geologist; and
- (2) The construction quality assurance program shall be supervised by a registered civil engineer or certified engineering geologist who shall be designated the CQA officer.

(c) **Reports.**

- (1) The project's CQA report shall address the construction requirements, including any vegetation procedures, set forth in the design plan for the containment system. For each specified phase of construction, this report shall include, but not be limited to:

(A) a delineation of the CQA management organization, including the chain of command of the CQA inspectors and contractors;

(B) a detailed description of the level of experience and training for the contractor, the work crew, and CQA inspectors for every major phase of construction in order to ensure that the installation methods and procedures required in the containment system design will be properly implemented.

(C) a description of the CQA testing protocols for preconstruction, construction, and postconstruction which shall include at a minimum:

1. the frequency of inspections by the operator,
2. the sampling and field testing procedures and equipment to be utilized, and the calibration of field testing equipment,
3. the frequency of performance audits determined by the design professional and examined by the CQA officer,
4. the size, method, location and frequency of sampling, sampling procedures for laboratory testing, the soils or geotechnical laboratory to be used, the laboratory procedures to be utilized, the calibration of laboratory equipment and quality assurance and quality control of laboratory procedures,
5. the pass/fail criteria for sampling and testing methods used to achieve containment system design, and
6. a description of the corrective procedures in the event of test failure.

(d) **Documentation** — Construction quality assurance documentation requirements shall include, at the minimum: reports bearing unique identifying sheet numbers for cross referencing and document control, the date, project name, location, descriptive remarks,

the data sheets, inspection activities, and signature of the designated authorities with concurrence of the CQA officer.

(1) The documentation shall include:

(A) **Daily Summary Reports** — daily recordkeeping, which shall include preparation of a summary report with supporting inspection data sheets, problem identification and corrective measures reports. Daily summary reports shall provide a chronological framework for identifying and recording all other reports. Inspection data sheets shall contain all observations (i.e., notes, charts, sketches, or photographs), and a record of field and/or laboratory tests. Problem identification and corrective measures reports shall include detailed descriptions of materials and/or workmanship that do not meet a specified design and shall be cross-referenced to specific inspection data sheets where the problem was identified and corrected;

(B) **Acceptance Reports** — all reports shall be assembled and summarized into Acceptance Reports in order to verify that the materials and construction processes comply with the specified design. This report shall include, at a minimum, inspection summary reports, inspection data sheets, problem identification and corrective measures reports;

(C) **Final Documentation** — at the completion of the project, the operator shall prepare a Final Documentation which contains all reports submitted concerning the placement of the containment system. This document shall provide evidence that the CQA plan was implemented as proposed and that the construction proceeded in accordance with design criteria, plans, and specifications. The discharger shall submit copies of the Final Documentation report to the RWQCB as prepared by the CQA officer.

(2) Once construction is complete, the document originals shall be stored by the discharger in a manner that will allow for easy access while still protecting them from any damage. All documentation shall be maintained throughout the postclosure maintenance period.

(e) **Laboratory Testing Requirements.** *[Note: the following (ASTM) standards are available from the American Society of Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2929, phone: 610-832-9585.]*

(1) Analysis of earthen materials shall be performed prior to their incorporation into any containment system component. Representative samples for each layer within the containment system shall be evaluated. The following minimum laboratory testing procedures shall be performed:

(A) ASTM Designation: D 1557 91 [1/91], “*Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700 kN-m/m³)*” which is incorporated by reference;

(B) ASTM Designation: D 422 63 (Reapproved) [9/90], “*Standard Method for Particle Size Analysis of Soils*,” which is incorporated by reference; and

(C) ASTM Designation: D 2487 93 [11/93], “*Standard Classification of Soils for Engineering Purposes*,” which is incorporated by reference.

(2) In addition to the tests listed in (e and f), the following minimum laboratory tests shall be performed on low-hydraulic-conductivity layer components constructed from soil:

(A) ASTM Designation: D 4318 93 [11/93], “*Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils*,” which is incorporated by reference; and

(B) United States Environmental Protection Agency (**USEPA**) Test Method 9100 [Approved 9-86], “*Triaxial-Cell Method with Back Pressure*,” which is incorporated by reference.

(f) **Field Testing Requirements** — The following minimum field test procedure shall be performed for each layer in the containment system: *ASTM Designation: D 2488 93 [9/93], Standard Practice for Description and Identification of Soils (Visual Manual Procedure)*, which is incorporated by reference.

(g) **Test Fill Pad Requirements** — Before installing the compacted soil barrier layer component of a final cover system, or the compacted soil component of a liner system, the operator shall accurately establish the correlation between the design hydraulic conductivity and the density at which that conductivity is achieved. To accomplish this the operator shall:

(1) provide a representative area for a test on any compacted foundation and low-hydraulic-conductivity layers. The following minimum testing procedures shall be performed:

(A) the test pad foundation and, for final covers, the barrier layers shall be compacted with the designated equipment to determine if the specified density/moisture-content/hydraulic-conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness;

(2) perform laboratory tests as specified in subsection (e); and

(3) perform field tests as specified in subsection (f). The discharger shall perform hydraulic conductivity tests in the test area under saturated conditions by using the standard test method ASTM Designation: D 3385 94 [9/94], “Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer,” which is incorporated by reference, for vertical hydraulic conductivity measurements. A sufficient number of tests shall be run to verify the results. Other methods that provide an accurate and precise method of measuring field hydraulic conductivity may be utilized as approved by the RWQCB.

(4) Correlations between laboratory tests and test pad results shall be established for each of the various types of fill materials and blends to be used in construction of the actual cover.

(h) **Earthen Material Requirements.**

(1) The following minimum tests shall include, but not be limited to:

(A) Laboratory tests as specified in &(e); and

(B) Field tests as specified in subsections (f and g).

(2) The following minimum testing frequencies shall be performed:

(A) Four (4) field density tests shall be performed for each 1,000 cubic yards of material placed, or at a minimum of four (4) tests per day;

(B) Compaction curve data (ASTM Designation: D 1557 91) graphically represented, and Atterberg limits (ASTM Designation: D 4318 93) shall be performed on the barrier layer material once a week and/or every 5,000 cubic yards of material placed;

(C) For field hydraulic conductivity tests, representative samples shall be performed on barrier layer material;

1. The frequency of testing may be increased or decreased, based on the pass/failure status of previous tests, as approved by the RWQCB.

2. Field infiltration tests shall be performed for the duration necessary to achieve steady conditions for the design hydraulic conductivity.

3. The following interpretive equation shall be used to determine the design hydraulic conductivity:

The infiltration rate (**I**) is defined as:

$$\mathbf{I} = \mathbf{Q}/(\mathbf{tA})$$

where:

Q = volume of flow;

t = interval of time corresponding to flow Q; and

A = area of the ring;

then the hydraulic conductivity (**k**) can be calculated from Darcy's law as follows:

$$\mathbf{k} = \mathbf{I}/\mathbf{i}$$

where:

I = infiltration rate; and

i = hydraulic gradient.

(i) Geosynthetic Membrane Requirements.

(1) Performance requirements for the geosynthetic membrane include, but are not limited to, the following:

(A) a need to limit infiltration of water, to the greatest extent possible;

(B) a need to control landfill gas emissions;

(C) for final covers, mechanical compatibility with stresses caused by equipment traffic, and the result of differential settlement of the waste over time; and

(D) for final covers, durability throughout the postclosure maintenance period.

(2) **Minimum Criteria** — The minimum construction quality assurance criteria to ensure that geosynthetic membranes will meet or exceed all design specifications shall include, but not be limited to:

(A) Preconstruction quality control program:

1. inspection of the raw materials (e.g., density, melt flow index, percent carbon Black);

2. manufacturing operations and finished product specifications (e.g., thickness, puncture resistance, multi axial stress/strain tests),

3. fabrication operations (e.g., factory seaming);

4. observations related to transportation, handling, and storage of the geosynthetic membrane; and

5. inspection of foundation preparation;

(B) Construction activities:

1. the geosynthetic membrane shall have thickness strength sufficient to withstand the stresses to which it shall be subjected, including shear forces, puncture from rocks or, for final covers, penetration from roots.

2. inspection of geosynthetic membrane placement (e.g., trench corners, monitoring systems).

3. seaming of the material; and

4. installation of anchors and seals;

(C) **Postconstruction Activity** — postconstruction activity includes checking for material and placement imperfections in the installed geosynthetic membrane.

Imperfections that jeopardize the integrity of the membrane's function as an impermeable barrier (i.e., pin holes, rips, creases created during placement) shall be repaired to the original manufacturer's specifications and reinspected by the CQA officer; and

(D) **Evaluation** — evaluation of the personnel and equipment to be used to install and inspect the geosynthetic membrane, and pass/fail criteria and corrective procedures for material and installation procedures shall be specified as required in &(c).

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20700. CIWMB - Intermediate Cover. (T14:§17684)

(a) Compacted earthen material at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within 180 days to control vectors, fires, odors, blowing litter, and scavenging.

(b) Alternative materials of alternative thickness (other than at least twelve inches of earthen material) for intermediate cover may be approved by the EA with concurrence by the CIWMB, if the owner or operator demonstrates that the alternative material and thickness control vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment.

(c) For waste classification, composition, and liquid percolation requirements of intermediate cover and alternative intermediate cover, refer to the SWRCB requirements set forth in §20705 of this article.

(d) Proposed use of alternative intermediate cover shall be subject to site specific demonstration to establish suitability as intermediate cover. Demonstration projects shall be approved by the EA with concurrence by the CIWMB.

NOTE: Authority Cited: Section 40502, 41781.3, Public Resources Code. Reference: Sections 40508, 43020, 43021 and 43103, Public Resources Code; and Code of Federal Regulations Section 258.21.

§20365. SWRCB - Precipitation and Drainage Controls. [C15: §2546 // T14: §17778(e), (f)(1), (g), & (j)]

(a) **General** — Units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions specified in Table 4.1 (of this article) for each class of waste management unit (Unit).

[Note: see also §21090(b)(1).]

(b) **Undiverted Precipitation** — Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the leachate collection and removal system, which shall be designed and constructed to accommodate precipitation conditions specified in Table 4.1 of this article or each class Unit.

(c) **Performance Standards** — Diversion and drainage facilities shall be designed, constructed, and maintained:

(1) to accommodate the anticipated volume of precipitation and peak flows from surface runoff under the precipitation conditions specified in Table 4.1 of this article for each class of Unit;

(2) to effectively divert sheet flow runoff laterally, or via the shortest distance, into the drainage and collection facilities;

(3) to prevent surface erosion through the judicious use of:

- (A) energy dissipators where required to decrease the velocity of runoff; and
 - (B) slope protection and other erosion control measures;
 - (4) to control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;
 - (5) to take into account:
 - (A) for closed Units and for closed portions of Units, the expected final contours of the closed Unit, including its planned drainage pattern;
 - (B) for operating portions of Units other than surface impoundments, the Unit's drainage pattern at any given time;
 - (C) the possible effects of the Unit's drainage pattern on and by the regional watershed;
 - (D) the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and
 - (6) to preserve the system's function. Therefore, the discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.
 - (d) **Maintain Capacity** — Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system.
 - (e) **Divert Drainage** — Surface and subsurface drainage from outside of a Unit shall be diverted from the Unit.
 - (f) **Resist Erosion from Design Storm** — Cover materials shall be graded to divert precipitation from the Unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation with the return frequency specified in Table 4.1 (of this article) for each class of Unit, unless, for a landfill, the CIWMB/EA requires (for protection of public health and safety) that the design be capable of resisting erosion resulting from a longer return interval storm [see §21150(b)]. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the Unit in a manner promoting free drainage from all portions of the drainage layer.
- NOTE: Authority cited: Section 1058, Water Code; Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.**

§20370. SWRCB - Seismic Design. (C15: §2547)

- (a) Class II Units shall be designed to withstand the maximum credible earthquake (**MCE**) without damage to the foundation or to the structures which control leachate, surface drainage, or erosion, or gas. Class III Units shall be designed to withstand the maximum probable earthquake (**MPE**) without damage to the foundation or to the structures which control leachate, surface drainage, or erosion, or gas. *[Note: see also submittal requirements under §21750(f)(5)]*

NOTE: Authority cited: Section 1058, Water Code; Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20380. SWRCB - Applicability. (C15: §2550.0)

- (a) The regulations in this article apply to owners or operators of facilities that treat, store, or dispose of waste at waste management units. The owner or operator of a surface impoundment, waste pile, landfill, or land treatment unit that receives or has received

waste (hereinafter referred to as “**waste management units,**” or “**Units**”) that is subject to the SWRCB-promulgated requirements of this division, pursuant to §§20080 and 20090 shall comply with the provisions of this article for purposes of detecting, characterizing, and responding to releases to ground water, surface water, or the unsaturated zone. Furthermore, §20400 of this article also applies to all determinations of alternative cleanup levels for unpermitted discharges to land of solid waste, pursuant to ¶III.G. of SWRCB Resolution No. 92-49 [§2550.4 of Title 23 of this code serves a similar function for unpermitted discharges to land of hazardous waste].

(b) **Known or Reasonably Foreseeable Release** — In accordance with applicable requirements of §§22220-22222, waste discharge requirements (**WDRs**) for a Unit subject to this section shall contain a provision which requires the discharger to obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the Unit.

(c) [Reserved]

(d) **Apply Unless Clean-Closed** — The regulations under this article apply during the Unit’s active life and closure period. After closure of the Unit, the regulations in this article apply during the post closure maintenance period of the Unit and during any compliance period under §20410 of this article, unless:

- (1) the Unit has been in compliance with the water quality protection standard (“**Water Standard**” of §20390) for a period of three consecutive years; and
- (2) **Clean-Closure** — all waste, waste residues, contaminated containment system components, contaminated subsoils, and all other contaminated materials are removed or decontaminated at closure, pursuant to: §21090(f), for landfills; §21400(b)(1), for surface impoundments; or §21410(a)(1), for waste piles.

(e) **Allowable Engineered Alternatives** — In considering a monitoring proposal by the discharger, the RWQCB can allow an engineered alternative for any of the prescriptive standards in this article so long as the RWQCB:

- (1) finds that each engineered alternative meets the requirements of §20080(b & c);
- (2) finds, for each applicable program under §20385, that the discharger’s proposed monitoring-data procurement and analysis methods achieve the program’s respective goals, including:
 - (A) for a detection monitoring program, the goals articulated in §20420(b);
 - (B) for an evaluation monitoring program, the goals articulated in §20425(a)(2); and
 - (C) for a corrective action program, the goals articulated in §20430(b);
- (3) requires ground water monitoring at least annually at disposal Units and at Units that will be used for five or more years for waste treatment or storage.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13267, Water Code; Section 43103, Public Resources Code.

§20385. SWRCB - Required Programs. (C15: §2550.1)

(a) **Monitoring Programs & their Respective Triggers** — A discharger subject to this article shall conduct a monitoring and response program, approved by the RWQCB, for each Unit at the facility as follows.

- (1) **Detection Monitoring (default)** — The discharger shall institute a detection monitoring program (under §20420) except as required below under ¶(a)(2-4);

(2) **Evaluation Monitoring (trigger #1)** — The discharger shall institute an evaluation monitoring program (under §20425) whenever there is “**measurably significant**” (see §20164) evidence of a release from the Unit during a detection monitoring program [under §20420(g or i)];

(3) **Evaluation Monitoring (trigger #2)** — The discharger shall institute an evaluation monitoring program (under §20425) whenever there is significant physical evidence of a release from the Unit. Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, and unexplained water table mounding beneath or adjacent to the Unit and any other change to the environment that could reasonably be expected to be the result of a release from the Unit; and

(4) **Corrective Action** — The discharger shall institute a corrective action program under §20430 of this article when the RWQCB determines (pursuant to §20425) that the assessment of the nature and extent of the release and the design of a Corrective Action Program have been satisfactorily completed and the RWQCB approves the application for an amended report of waste discharge for corrective action submitted by the discharger during an evaluation monitoring program [pursuant to §20425(d)].

(b) **Preparation for Other Programs** — The RWQCB shall specify in the WDRs the specific type or types of monitoring programs required and the specific elements of each monitoring and response program. For each Unit, the RWQCB shall require one or more of the programs identified in ¶(a) that is appropriate for the prevailing state of containment at the Unit, and shall specify the circumstances under which each of the programs will be required. In deciding whether to require the discharger to be prepared to institute a particular program, the RWQCB shall consider the potential adverse effects on human health or the environment that might occur before final administrative action on an amended report of waste discharge to incorporate such a program could be taken.

(c) **Concurrent Detection Monitoring Program, Where Necessary** — In conjunction with an evaluation monitoring program or a corrective action program, the discharger shall continue to conduct a detection monitoring program as necessary to provide the best assurance of the detection of subsequent releases from the Unit.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304 Water Code; Section 43103, Public Resources Code.

§20390. SWRCB - Water Quality Protection Standard (Water Standard). (C15: §2550.2)

(a) **Components & Duration** — For each Unit, the RWQCB shall establish a water quality protection standard (**Water Standard**) in the WDRs. This Water Standard shall consist of the list of constituents of concern (under §20395), the concentration limits (under §20400), and the Point of Compliance and all Monitoring Points (under §20405). This Water Standard shall apply during the active life of the Unit, the closure period, the post closure maintenance period, and during any compliance period (under §20410).

(b) **Program-Specific Water Standards** — If a discharger is conducting a detection monitoring program in conjunction with a corrective action program for a Unit [pursuant to §20385(c)], the RWQCB may establish separate Water Standards for each program.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304, Water Code; Section 43103, Public Resources Code.

§20395. SWRCB - Constituents of Concern (COCs). (C15: §2550.3)

(a) **COCs** — For each Unit, the RWQCB shall specify in the WDRs the Constituents of Concern (COCs) to which the Water Standard (under §20390) applies. The COC list shall include all waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit.

(b) **MSW COCs** — For MSW landfills, the COC list shall include all constituents mandated under SWRCB Resolution No. 93-62.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20400. SWRCB - Concentration Limits. (C15: §2550.4)

[Note: The special applicability of this section is described in §20380(a); see also §20080(a).]

(a) **Proposal of Concentration Limits** — For each Constituent of Concern (COC) specified pursuant to §20395 (or for a solid waste constituent that is addressed by a cleanup and abatement action taken pursuant to SWRCB Resolution No. 92-49), the discharger shall propose one of the following for each medium (under §20415, including ground water, surface water, and the unsaturated zone) monitored pursuant to §20415 of this article:

- (1) **Background Value** — a concentration limit not to exceed the background value of that constituent as determined pursuant to §20415(e)(10)(A);
- (2) **Value Redetermined Each Time** — that the WDRs include a statement that, at any given time, the concentration limit for that COC will be equal to the background value of that constituent, as determined pursuant to §20415(e)(10)(B); or
- (3) **CLGBC** — a concentration limit greater than background (**CLGB**) established pursuant to this section for a corrective action program.

(b) **Adoption of Concentration Limits** — The RWQCB shall review the proposed concentration limits and statements and shall approve, modify, or disapprove each proposed limit and each proposed statement. Upon final approval by the RWQCB, each concentration limit and each statement shall be specified in WDRs. The RWQCB shall approve more than one concentration limit for different Monitoring Points in the same medium only if:

- (1) more than one background condition exists within a particular medium;
- (2) the statistical method approved for a constituent uses intra well comparisons procedures; or
- (3) CLGBs have been established for a corrective action program at the Monitoring Points in the zone affected by a release from the Unit.

(c) **Establishing a CLGB** — For a corrective action program, the RWQCB shall establish a CLGB [under ¶(a)(3)] only if the RWQCB finds that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the CLGB is not exceeded. In making this finding, the RWQCB shall consider the factors specified in ¶(d), the results of the engineering feasibility study submitted pursuant to §20425(c), data submitted by the discharger pursuant to §20425(d)(2) to support the proposed CLGB, public testimony on the proposal, and any additional data obtained during the evaluation monitoring program.

(d) **Considerations** — In establishing a CLGB for a constituent of concern, the RWQCB shall consider the following factors:

- (1) potential adverse effects on ground water quality and beneficial uses, considering:
 - (A) the physical and chemical characteristics of the waste in the Unit;
 - (B) the hydrogeological characteristics of the facility and surrounding land;
 - (C) the quantity of ground water and the direction of ground water flow;
 - (D) the proximity and withdrawal rates of ground water users;
 - (E) the current and potential future uses of ground water in the area;
 - (F) the existing quality of ground water, including other sources of contamination or pollution and their cumulative impact on the ground water quality;
 - (G) the potential for health risks caused by human exposure to waste constituents;
 - (H) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and
 - (I) the persistence and permanence of the potential adverse effects; and
- (2) potential adverse effects on surface water quality and beneficial uses, considering:
 - (A) the volume and physical and chemical characteristics of the waste in the Unit;
 - (B) the hydrogeological characteristics of the facility and surrounding land;
 - (C) the quantity and quality of ground water and the direction of ground water flow;
 - (D) the patterns of precipitation in the region;
 - (E) the proximity of the Unit to surface waters;
 - (F) the current and potential future uses of surface waters in the area;
 - (G) the existing quality of surface water including other sources of contamination or pollution and the cumulative impact on surface water quality;
 - (H) the potential for health risks caused by human exposure to waste constituents;
 - (I) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and
 - (J) the persistence and permanence of the potential adverse effects.

(e) **CLGB Ceiling** — In no event shall a CLGB for a constituent of concern exceed the lowest concentration that the discharger demonstrates and the RWQCB finds is technologically and economically achievable. No provision of this section shall be taken to allow a CLGB for a constituent of concern to exceed the maximum concentration that would be allowed under other applicable statutes or regulations [*e.g., Maximum Concentration Limits established under the federal Safe Drinking Water Act (P.L. 93 523, codified as Subchapter XII of the Public Health Service Act at 42 USC 300f, et. seq.; regulations establishing MCL's are located in 40 CFR Part 141, Subpart B), etc.*].

(f) **Receptor Location** — For ground water, in evaluating risk pursuant to ¶(d) to any biological receptor, the risk shall be evaluated as if exposure would occur at the Point of Compliance.

(g) **Additivity** — Proposals for CLGBs shall include a demonstration that the aggregate of hazardous constituents in the environment will not result in excessive exposure to a sensitive biological receptor. In the absence of scientifically valid data to the contrary, theoretical risks from chemicals associated with the release from the Unit shall be considered additive across all media of exposure, and shall be considered additive for all chemicals having similar toxicological effects or having carcinogenic effects.

(h) **Applicability** — A CLGB may only be applied during corrective action, or during detection monitoring following corrective action, at Monitoring Points at which “measurably significant” (see §20164) evidence of the release has been determined.

(i) **Decreasing the CLGB** — When a detection monitoring program incorporating a CLGB is reinstated after a corrective action program has been terminated, each CLGB shall be re evaluated during each review of WDRs or at least every five years. If the RWQCB, upon re evaluation, determines that the concentration of a constituent of concern in ground water, surface water, or the unsaturated zone is lower than its associated concentration limit by a “measurably significant” (see §20164) amount, the concentration limit for that constituent shall be lowered to reflect current water quality.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20405. SWRCB - Monitoring Points and the Point of Compliance. (C15: §2550.5)

(a) For each Unit, the RWQCB shall specify in the WDRs the Point of Compliance at which the Water Standard (of §20390) applies. The Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. For each Unit, the RWQCB shall specify Monitoring Points (as defined in §20164) along the Point of Compliance, and shall specify additional Monitoring Points at locations determined pursuant to §20415(b-d) at which the Water Standard under §20390 applies and at which monitoring shall be conducted.

(b) If the facility contains contiguous Units and monitoring along a shared boundary would impair the integrity of a containment or structural feature of any of the Units, the Point of Compliance may be located at the hydraulically downgradient limit of an area described by an imaginary line along the outer boundary of the contiguous Units. This provision only applies to contiguous Units that have operated or have received all permits necessary for construction and operation before 7-1-91.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20410. SWRCB - Compliance Period. (C15: §2550.6)

(a) The RWQCB shall specify in WDRs a compliance period for each Unit. The compliance period is the number of years equal to the active life of the Unit (including any waste management activity prior to the adoption of the WDRs) plus the closure period. The compliance period is the minimum period of time during which the discharger shall conduct a water quality monitoring program subsequent to a release from the Unit.

(b) The compliance period begins anew each time the discharger initiates an evaluation monitoring program (under §20425).

(c) If the discharger is engaged in a corrective action program at the scheduled end of the compliance period specified under ¶(a), the compliance period shall be extended until the discharger can demonstrate that the Unit has been in continuous compliance with its Water Standard (under §20390) for a period of three consecutive years.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20415. SWRCB - General Water Quality Monitoring and System Requirements.

[C15: §2550.7 // T15: §17783.5(d)]

(a) The discharger shall comply with the requirements of this section for any water quality monitoring program developed to satisfy §20420, §20425, or §20430 of this article.

(b) **Ground Water Monitoring System.**

(1) **General** — Except as provided under ¶(e)(3), the discharger shall establish a ground water monitoring system for each Unit. This ground water monitoring system shall include:

(A) **For All Programs** — for all monitoring and response programs, a sufficient number of Background Monitoring Points (as defined in §20164) installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the Unit;

(B) **For DMP** — for a detection monitoring program under §20420:

1. a sufficient number of Monitoring Points (as defined in §20164) installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the Point of Compliance and to allow for the detection of a release from the Unit;

2. a sufficient number of Monitoring Points installed at additional locations and depths to yield ground water samples from the uppermost aquifer to provide the best assurance of the earliest possible detection of a release from the Unit;

3. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to ¶(b)(1)(B)1. and ¶(b)(1)(B)2., to provide the best assurance of the earliest possible detection of a release from the Unit;

4. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from zones of perched water to provide the best assurance of the earliest possible detection of a release from the Unit; and

5. Monitoring Point locations and depths that include the zone(s) of highest hydraulic conductivity in each ground water body monitored pursuant to this subsection [i.e., under ¶(b), inclusive].

(C) **For EMP** — for an evaluation monitoring program under §20425:

1. a sufficient number of Monitoring Points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the Point of Compliance and at other locations in the uppermost aquifer to provide the data needed to evaluate changes in water quality due to the release from the Unit;

2. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to ¶(b)(1)(C)1., to provide the data needed to evaluate changes in water quality due to the release from the Unit; and

3. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from zones of perched water to provide the data needed to evaluate changes in water quality due to the release from the Unit; and

(D) **For CAP** — for a corrective action program under §20430:

1. a sufficient number of Monitoring Points installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water passing the Point of Compliance and at other locations in the uppermost aquifer to provide the data needed to evaluate the effectiveness of the corrective action program;

2. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from portions of the zone of saturation, including other aquifers, not monitored pursuant to ¶(b)(1)(D)1., to provide the data needed to evaluate the effectiveness of the corrective action program; and

3. a sufficient number of Monitoring Points and Background Monitoring Points installed at appropriate locations and depths to yield ground water samples from zones of perched water to provide the data needed to evaluate the effectiveness of the corrective action program.

(2) **Alternate Background Locations** — The ground water monitoring system may include Background Monitoring Points that are not hydraulically upgradient of the Unit if the discharger demonstrates to the satisfaction of the RWQCB that sampling at other Background Monitoring Points will provide samples that are representative of the background quality of ground water or are more representative than those provided by the upgradient Background Monitoring Points.

(3) **Drillers' Logs** — Copies of drillers' logs which the Department of Water Resources requires to be submitted pursuant to §13751 of the California Water Code shall be submitted to the RWQCB.

(4) **Monitoring Well Performance Standards.**

(A) All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport.

(B) The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative ground water samples.

(C) For each monitoring well, the annular space (i.e., the space between the bore hole and well casing) above and below the sampling interval shall be appropriately sealed to prevent entry of contaminants from the ground surface, entry of contaminants from the unsaturated zone, cross contamination between portions of the zone of saturation, and contamination of samples.

(D) All monitoring wells shall be adequately developed to enable collection of representative ground water samples.

(c) **Surface Water Monitoring Systems.**

(1) **General** — The discharger shall establish a surface water monitoring system to monitor each surface water body that could be affected by a release from the Unit.

(2) **Each Monitored Surface Water Body** — Each surface water monitoring system shall include:

(A) **Background Monitoring Points** — a sufficient number of Background Monitoring Points established at appropriate locations and depths to yield samples from each surface water body that represent the quality of surface water that has not been affected by a release from the Unit;

(B) **For DMP** — for a detection monitoring program (under §20420), a sufficient number of Monitoring Points established at appropriate locations and depths to yield samples from each surface water body that provide the best assurance of the earliest possible detection of a release from the Unit;

(C) **For EMP** — for an evaluation monitoring program (under §20425), a sufficient number of Monitoring Points established at appropriate locations and depths to yield samples from each surface water body that provide the data to evaluate changes in water quality due to the release from the Unit; and

(D) **For CAP** — for a corrective action program (under §20430), a sufficient number of Monitoring Points established at appropriate locations and depths to yield samples from each surface water body that provide the data to evaluate compliance with the Water Standard (of §20390) and to evaluate the effectiveness of the corrective action program.

(d) **Unsaturated Zone Monitoring System.**

(1) Except as otherwise provided in ¶(d)(5), the discharger shall establish an unsaturated zone monitoring system for each Unit.

(2) **The unsaturated zone monitoring system shall include:**

(A) **Background Monitoring Points** — a sufficient number of Background Monitoring Points established at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that represent the quality of soil pore liquid that has not been affected by a release from the Unit;

(B) **For DMP** — for a detection monitoring program (under §20420), a sufficient number of Monitoring Points established at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that provide the best assurance of the earliest possible detection of a release from the Unit;

(C) **For EMP** — for an evaluation monitoring program (under §20425), a sufficient number of Monitoring Points established at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that provide the data to evaluate changes in water quality due to the release from the Unit; and

(D) **For CAP** — for a corrective action program (under §20430), a sufficient number of Monitoring Points established at appropriate locations and depths to yield soil pore liquid samples or soil pore liquid measurements that provide the data to evaluate compliance with the Water Standard (of §20390) and to evaluate the effectiveness of the corrective action program.

(3) **Background Plot** — Background Monitoring Points shall be installed at a background plot having soil characteristics similar to those of the soil underlying the Unit.

(4) **Alternate Methods** — Liquid recovery types of unsaturated zone monitoring (e.g., the use of lysimeters) are required unless the discharger demonstrates to the satisfaction of the RWQCB that such methods of unsaturated zone monitoring cannot provide an indication of a release from the Unit. The RWQCB shall require complementary or

alternative (non liquid recovery or remote sensing) types of unsaturated zone monitoring to provide the best assurance of the earliest possible detection of a release from the Unit.

(5) **Exemption** — Unsaturated zone monitoring is required at all new Units unless the discharger demonstrates to the satisfaction of the RWQCB that there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existent at that Unit. For a Unit that has operated or has received all permits necessary for construction and operation before 7 1 91, unsaturated zone monitoring is required unless the discharger demonstrates to the satisfaction of the RWQCB that either there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existent at that Unit or that installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures.

(e) **General monitoring requirements.**

(1) All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer.

(2) **Boring Logs** — All monitoring wells and all other borings (including but not limited to gas monitoring wells) drilled to satisfy the requirements of this division shall be drilled by a licensed drilling contractor (or by a drilling crew under the direct supervision of the design engineer or engineering geologist), and shall be logged during drilling under the direct supervision of a person who is a registered geologist or a registered civil engineer, and who has expertise in stratigraphic well logging. These logs shall be submitted to the RWQCB upon completion of drilling.

(A) Soil shall be described in the geologic log in accordance with current industry-wide practices [e.g., *American Society for Testing and Materials (ASTM) Designation "D2488-93 Method for Visual Classification, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" for field work, with initial determinations backed up by laboratory work under ASTM Designation "D2487-93 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System),"* available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959].

(B) Rock shall be described in the geologic log in a manner appropriate for the purpose of the investigation.

(C) Where possible, the depth and thickness of saturated zones shall be recorded in the geologic log.

(3) **Shared Systems** — If a facility contains contiguous Units, separate ground water monitoring systems are not required for each such Unit if the discharger demonstrates to the satisfaction of the RWQCB that the water quality monitoring program for each Unit will enable the earliest possible detection and measurement of a release from that Unit.

(4) **QA/QC** — The water quality monitoring program shall include consistent sampling and analytical procedures that are designed to ensure that monitoring results provide a reliable indication of water quality at all Monitoring Points and Background Monitoring Points. At a minimum, the program shall include a detailed description of the procedures and techniques for:

(A) sample collection, including purging techniques, sampling equipment, and decontamination of sampling equipment;

(B) sample preservation and shipment;

(C) analytical procedures; and

(D) chain of custody control.

(5) **Sampling & Analytical Methods** — The water quality monitoring program shall include appropriate sampling and analytical methods for ground water, surface water, and the unsaturated zone that accurately measure the concentration of each COC and the concentration or value of each Monitoring Parameter.

(6) **Initial Background Sampling** — For each Unit, the discharger shall collect all data necessary for selecting the appropriate data analysis methods pursuant to ¶(e)(7-9) and for establishing the background values specified pursuant to ¶(e)(10). At a minimum, this data shall include analytical data obtained during quarterly sampling of all Background Monitoring Points for a period of one year, including the times of expected highest and lowest annual elevations of the ground water surface. For a new Unit, this data shall be collected before wastes are discharged at the Unit and background soil pore liquid data shall be collected from beneath the Unit before the Unit is constructed.

(7) **Propose Data Analysis Method(s)** — Based on data collected pursuant to ¶(e)(6), the discharger shall implement data analysis methods allowed in ¶(e)(8) for each COC and for each Monitoring Parameter. The data analysis methods shall be used in evaluating water quality monitoring data. The specifications for each data analysis method shall include a detailed description of the criteria to be used for determining “measurably significant” (as that term is defined in §20164) evidence of any release from the Unit and for determining compliance with the Water Standard. Each statistical test specified for a particular COC or Monitoring Parameter shall be conducted for that COC or Monitoring Parameter at each Monitoring Point. Where practical quantitation limits (**PQLs**) are used in any of the following data analysis methods to comply with ¶(e)(9)(E), the discharger shall identify the PQL to the RWQCB. The discharger shall:

(A) continue using the methods specified in the existing M&RP; or

(B) submit to the RWQCB, before implementing the selected methods, a comprehensive technical report, certified by an appropriately registered professional, documenting that use of the proposed data analysis methods will comply with the performance standards outlined in ¶(e)(9, 10, & 12):

1. the RWQCB shall audit selected reports submitted pursuant to this subdivision for compliance and applicability, as deemed necessary by the RWQCB; and
2. the discharger shall not change the data analysis methods developed pursuant to this subdivision until the next review/update of the M&RP, unless directed to make changes by the RWQCB; or

(C) use any water quality data analysis software the SWRCB or RWQCB deems appropriate for such use, provided that the manner of such use is consistent with the manner of usage the SWRCB or RWQCB has deemed appropriate (without the need for additional substantiation), for that software, and further provided that the discharger notifies the RWQCB before initiating such use.

(8) **Allowable Data Analysis Methods** — The statistical data analysis requirement in this article do not preclude the use of a particular non-statistical method which can achieve the goal of the particular monitoring program at least as well as will the most appropriate statistical method. If statistical methods cannot meet these goals, the discharger’s proposed non-statistical method must achieve the goal of the particular monitoring program adequately [see ¶(e)(12)(A)1.-3.]. For those monitoring data

analyses in which statistical methods are used, the discharger shall use one of the following methods:

(A) **Parametric ANOVA** — a parametric analysis of variance (ANOVA) followed in all instances by a multiple comparisons procedure to identify “measurably significant” (see §20164) evidence of a release from the Unit. The method shall include estimation and testing of the contrasts between each monitoring point's mean and the background mean value for each constituent or parameter;

(B) **Nonparametric ANOVA** — an ANOVA based on ranks followed in all instances by a multiple comparisons procedure to identify “measurably significant” (see §20164) evidence of a release from the Unit. The method shall include estimation and testing of the contrasts between each monitoring point's median and the background median values for each constituent of concern or monitoring parameter;

(C) **Tolerance Interval** — a tolerance or prediction interval procedure in which an interval for each COC or Monitoring Parameter is established from the distribution of the background data, and the value for each COC or Monitoring Parameter at each monitoring point is compared to the upper tolerance or prediction limit;

(D) **Control Chart** — a control chart approach that gives control limits for each COC or Monitoring Parameter; or

(E) **Other Statistical Methods** — any statistical test method submitted by the discharger including, but not limited to, any statistical method which includes a procedure to verify that there is “measurably significant” (see §20164) evidence of a release from the Unit. If the statistical test method includes a verification procedure, this procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the Monitoring Point that indicated a release) or shall consist of at least two “discrete” retests (i.e., statistical analyses each of which analyzes only newly acquired data from the Monitoring Point that indicated a release). The verification procedure shall comply with the following requirements in addition to the statistical performance standards under ¶(e)(9):

1. **Discrete Retest Rule** — if the verification procedure consists of discrete retests, rejection of the null hypothesis for any one of the retests shall be considered confirmation of “measurably significant” (see §20164) evidence of a release;

2. **Retest Sample Size** — the number of additional samples collected and analyzed for use in the verification procedure shall be appropriate for the form of statistical test specified in the WDRs for that COC or Monitoring Parameter pursuant to ¶(e)(7). The number of additional samples (obtained at the indicating Monitoring Point for the indicating COC or Monitoring Parameter) shall be greater than or equal to the number of samples specified in the WDRs for that constituent or parameter pursuant to ¶(e)(12)(A);

3. **30-Day Resampling Window** — if resampling at the interval identified for use in the initial statistical test pursuant to ¶(e)(12)(B) would cause the entire resampling effort to take longer than 30 days, the sampling interval for use in the verification procedure shall be reduced to ensure that all samples are collected and submitted for laboratory analysis within 30 calendar days from the time that the discharger determines “measurably significant” (see §20164) evidence of a release pursuant to §20420(g or i);

4. **Data Mix** — for a verification procedure containing a composite retest, the statistical verification procedure shall be based on all data obtained from the initial sampling event combined with all data obtained during the resampling event. For a

verification procedure containing discrete retests, each retest shall analyze data obtained during its respective resampling event(s) and no data shall be shared between retests;

5. **Retest Effects on Type I Error Rate** — the Type I error for statistical methods employing a retest procedure shall be as follows:

a. **When Initial Test = Retest** — in cases where the discharger proposes to use the same statistical test for both the initial test and the retest, either:

i. **α for Composite Retest** — for a verification procedure containing a composite retest, the statistical test method used in the verification procedure shall be conducted at a Type I error rate of no less than 0.05 for both the experiment wise analysis (if any) and the individual Monitoring Point comparisons. Therefore, if a control chart approach is used to evaluate water quality monitoring data, the upper limit on an X Bar or R Chart must be set at no more than 1.645 standard deviations of the statistic plotted for a one sided statistical comparison or at no more than 1.96 standard deviations of the statistic plotted for a two sided statistical comparison; or

ii. **α for Discrete Retest (& Original Test Too)** — For a verification procedure containing discrete retests, the statistical test method used shall be the same as the method used in the initial statistical comparison. Notwithstanding any provision of ¶(e)(9), the critical value for the tests shall be chosen so that the Type I error rate for all individual monitoring point comparisons is the same, whether for an initial test or for a retest, and is equal to or greater than either

$$(1-[0.95]^{1/[M*W*S]})^{0.5} * (1/R)^{0.5}, \text{ or}$$

$$1-(0.99)^{1/S},$$

whichever is larger, where: **M** = the number of Monitoring Parameters (or COCs, as appropriate) being tested by statistical methods during that Reporting Period; **W** = the total number of Monitoring Points at the Unit (considering all monitored media); **S** = the number of times that suites of monitoring data from the Unit are subjected to initial statistical analysis within a period of six months (i.e., for Monitoring Parameter testing, $S \geq 1$, but for COC testing, $S=1$); and **R** = the number of discrete retests that are to be conducted at a Monitoring Point for a given COC or Monitoring Parameter whose initial statistical analysis, at that Monitoring Point, has indicated the presence of a release (i.e., $R \geq 2$); or

b. **When Retest Differs From Initial Test Method** — in cases where the discharger proposes to use a different statistical test for the composite or discrete retest than that which provided the initial indication of a release (e.g., parametric Tolerance Limit test facility-wide, following by a parametric Prediction Limit retest for any indicating Monitoring Point), the individual Monitoring Point error level requirements of ¶(e)(9)(B) do not apply. Nevertheless, the discharger shall demonstrate that the initial and retest method, in combination, provide:

i. a facility-wide false positive rate of $\leq 5\%$, for the indicated COC or Monitoring Parameter; and

ii. a statistical power equivalent to or better than the USEPA Reference Power Curve (see Section 5 and Appendix B of “*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities C Addendum To Interim Final Guidance*”, USEPA

Office of Solid Waste, Washington, D.C., July, 1992), which is hereby incorporated by reference.

6. **Reporting** — the discharger shall report to the RWQCB by certified mail the results of both the initial statistical test and the results of the verification procedure, as well as all concentration data collected for use in these tests within seven days of the last laboratory analysis of the samples collected for the verification procedure; and

7. **Scope** — the verification procedure shall only be performed for the constituent(s) or parameters which has shown “measurably significant” (see §20164) evidence of a release, and shall be performed for those Monitoring Points at which a release is indicated.

(9) **Data Analysis Method Performance Standards** — In cases where the discharger proposes to use a non-statistical data analysis method, the discharger shall demonstrate that it meets the performance standard given in the leading paragraph of ¶(e)(8). Each statistical method chosen under ¶(e)(7) for specification in the WDRs shall comply with the following performance standards for each six month period:

(A) **Fit & Performance** — the statistical method used to evaluate water quality monitoring data shall be appropriate for the distribution of the COC or Monitoring Parameter to which it is applied and shall be the least likely of the appropriate methods to fail to identify a release from the Unit. If the distribution of a COC or Monitoring Parameter is shown by the discharger to be inappropriate for a normal theory test, then the data shall be either transformed so that the distribution of the transformed data is appropriate for a normal theory test or a distribution free theory test shall be used. If the distributions for the COC or Monitoring Parameters differ, more than one statistical method may be needed;

(B) **α Level** — if an individual Monitoring Point comparison procedure is used to compare an individual Monitoring Point constituent concentration or Monitoring Parameter value with a concentration limit in the Water Standard or with a background Monitoring Parameter value, the test shall be done at a Type I error rate (α , as a decimal fraction) no less than 0.01. If a multiple comparisons procedure is used, the Type I experiment wise error rate (experiment-wise α) shall be no less than 0.05; however, a Type I error rate of no less than 0.01 for individual Monitoring Point comparisons shall be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, control charts, or any method using discrete retests [for α levels applicable to the latter case, see ¶(e)(8)(E)5.b.];

(C) **Control Chart Rate** — if a control chart approach is used to evaluate water quality monitoring data, the specific type of control chart and its associated statistical parameter values (*e.g., the upper control limit*) shall be included in the supporting documentation under ¶(e)(7). The discharger shall use the procedure only if the discharger’s supporting documentation under ¶(e)(7) shows the procedure to be protective of human health and the environment. Any control charting procedure must have a false positive rate of no less than 1 percent for each Monitoring Point charted (*e.g., upper control limits on \bar{X} bar or R Charts used only once every six months must be set at no more than 2.327 standard deviations of the statistic plotted for a one sided statistical comparison or at no more than 2.576 standard deviations of the statistic plotted for a two sided statistical comparison*);

(D) **Tol. Int./Pred. Int. Rate** — if a tolerance interval or a prediction interval is used to evaluate water quality monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain shall be proposed by the discharger and included in the technical documentation submitted to the RWQCB pursuant to ¶(e)(7). The discharger can use the parameters only if the documentation submitted under ¶(e)(7) shows these statistical parameters to be protective of human health and the environment. These statistical parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentrations or values for each COC or Monitoring Parameter. The coverage of any tolerance interval used shall be no more than 95 percent and the confidence coefficient shall be no more than 95 percent for a six month period. Prediction intervals shall be constructed with an experiment wise error rate of no less than 5 percent and an individual monitoring point error rate of no less than 1 percent;

(E) **Addressing Censored Data** — the statistical method shall account for data below the practical quantitation limit with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit validated pursuant to ¶(e)(7) that is used in the statistical method shall be the lowest concentration (or value) that can be reliably achieved within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The discharger's technical report, under ¶(e)(7) shall consider the practical quantitation limits listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations (Appendix IX) for guidance when specifying limits of precision and accuracy in the WDRs;

(F) **Seasonal/Spatial Variability** — if necessary, the statistical methods shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data; and

(G) **Outliers** — any quality control procedure that is declared for use, in the technical report under ¶(e)(7), for application to water quality data from downgradient monitoring points for a monitored medium shall also be applied to all newly acquired background data from that medium. Any newly acquired background monitoring datum that is rejected by an approved quality control procedure shall be maintained in the facility record but shall be excluded from use in statistical comparisons with downgradient water quality data.

(10) **Background Values/Procedures** — Based on the data collected pursuant to ¶(e)(6) and the data analysis methods addressed in the technical report under ¶(e)(7), the discharger shall justify the use of a procedure for determining a background value for each COC and for each Monitoring Parameter specified in the WDRs. These procedures shall be proposed for ground water, surface water, and the unsaturated zone. The discharger shall declare and substantiate one of the following methods in the technical report under ¶(e)(7):

(A) **By Reference to Historical Data** — a procedure for determining a background value for each constituent or parameter that does not display appreciable variation; or

(B) **By Using a Formula/Procedure** — a procedure for establishing and updating a background value for a constituent or parameter to reflect changes in the background water quality if the use of contemporaneous or pooled data provides the greatest power to the data analysis method for that constituent or parameter.

(11) [Reserved]

(12) **Sampling Methods** — For each COC and Monitoring Parameter listed in the WDRs, the discharger shall verify, in the technical report under ¶(e)(7), that the sampling methods to be used to establish background values and the sampling methods to be used for monitoring pursuant to this article are consistent with the following:

(A) **Sample Size** — the number and kinds of samples collected shall be appropriate for the form of data analysis employed and, in the case of statistical data analysis shall follow generally accepted statistical principles. The “**sample size**” (i.e., the number of water quality data points representing a given Monitoring Point or Background Monitoring Point) approved for the data analysis method shall be as large as necessary to ensure with reasonable confidence that:

1. for a detection monitoring program, a release from the Unit will be detected;
2. for an evaluation monitoring program, changes in water quality due to a release from the Unit will be recognized; and
3. for a corrective action program, compliance with the water quality protection standard and effectiveness of the corrective action program will be determined; and

(B) **Data Collection & Analysis** — the sampling method (including the sampling frequency and the interval of time between successive samples) shall be appropriate for the medium from which samples are taken (*e.g., ground water, surface water, and soil pore liquid*). For ground water, sampling shall be scheduled to include the times of expected highest and lowest elevations of the potentiometric surface. The sampling method shall assure, to the greatest extent possible, that independent samples are obtained. For ground water, the discharger can use a post-sampling purge to assure sample independence whenever the time between successive sampling events (for a given COC or Monitoring Parameter) is insufficient to assure sample independence, in which case the volume of well water to be withdrawn from the well bore for the post sampling purge shall be determined by the same method used to determine adequate pre sampling purging. The sampling method selected shall include collection of at least the appropriate number of new data points [pursuant to ¶(e)(12)(A)] at least semi annually from each Monitoring Point and background monitoring point and data analysis carried out at least semi annually. The RWQCB shall require more frequent sampling and statistical analysis than is stated in the discharger’s technical report under ¶(e)(7) where necessary to protect human health or the environment.

(13) **Elevation & Field Parameters** — The ground water portion of the monitoring program shall include an accurate determination of the ground water surface elevation and field parameters (temperature, electrical conductivity, turbidity, and pH) at each well each time ground water is sampled.

(14) **Annual Data Graphs** — The discharger shall graph all analytical data from each Monitoring Point and Background Monitoring Point and shall submit these graphs to the RWQCB at least once annually, except that graphs are not required for constituents for which no new data has been collected since the previous graph submittal. Graphs shall be at a scale appropriate to show trends or variations in water quality. All graphs for a given constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. Unless the discharger receives written approval from the RWQCB to use an alternate procedure that more effectively illustrates trends or variations in the data, each

graph shall represent data from one Monitoring Point or Background Monitoring Point and one Constituent of Concern or Monitoring Parameter.

(15) **G.W. Flow Direction** — In addition to the water quality sampling conducted pursuant to the requirements of this article, the discharger shall measure the water elevation in each well and determine ground water flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored pursuant to ¶(b)(1) at least quarterly, including the times of expected highest and lowest elevations of the water levels in the wells.

(16) **Operating Record** — Water quality monitoring data collected in accordance with this article, including actual values of constituents and parameters, shall be maintained in the facility operating record. The RWQCB shall specify in the WDRs when the data shall be submitted for review.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20420. SWRCB - Detection Monitoring Program. (C15: §2550.8)

(a) **General** — A discharger required, pursuant to §20385, to establish a detection monitoring program for a Unit shall, at a minimum, comply with the requirements of this section for that Unit.

(b) **Standards** — The discharger subject to this section shall install water quality monitoring systems that are appropriate for detecting, at the earliest possible time, a release from the Unit, and that comply with applicable provisions of §20415.

(c) **Background** — The discharger shall establish a background value pursuant to §20415(e)(10) for each Monitoring Parameter specified pursuant to ¶(e) and for each Constituent of Concern under §20395.

(d) **Water Standard** — The RWQCB shall specify the Water Standard under §20390 in the WDRs.

(e) **Monitoring Parameters** — The discharger shall propose for approval by the RWQCB a list of Monitoring Parameters for each medium (ground water, surface water, and the unsaturated zone) to be monitored pursuant to ¶(i) and §20415, including a data analysis method meeting the requirements of that section for each Monitoring Parameter. The list for each monitored medium shall include those physical parameters, hazardous constituents, waste constituents, and reaction products that provide a reliable indication of a release from the Unit to that medium. In addition, for an MSW landfill, the list of monitoring parameters shall meet the requirements of SWRCB Resolution No. 93-62 (which incorporates by reference the federal requirements of 40CFR258.54). The RWQCB shall specify each list of Monitoring Parameters in the WDRs after considering the following factors:

- (1) the types, quantities, and concentrations of constituents in wastes managed at the Unit;
 - (2) the expected or demonstrated correlation between the proposed Monitoring Parameters and the Constituents of Concern specified for the Unit under §20395;
 - (3) the mobility, stability, and persistence of waste constituents or their reaction products;
 - (4) the detectability of physical parameters, waste constituents, and reaction products;
- and

(5) the background values and the coefficients of variation of proposed Monitoring Parameters in ground water, surface water, and the unsaturated zone.

(f) **Routine Monitoring** — The discharger shall monitor [pursuant to ¶(i)] for the Monitoring Parameters listed in the WDRs pursuant to ¶(e). The RWQCB shall specify the frequencies for collecting samples and for analyzing the resulting data, pursuant to §20415(e)(12).

(g) **Five-Yearly COC Monitoring** — In addition to monitoring for the Monitoring Parameters specified pursuant to ¶(e), the discharger shall periodically monitor for COCs specified in the WDRs, and shall determine, pursuant to ¶(i), whether there is “measurably significant” (see definition in §20164) evidence of a release for any COC using the data analysis procedure specified pursuant to §20415(e)(7). The RWQCB shall specify in WDRs the frequencies and locations for monitoring pursuant to this paragraph after considering the degree of certainty associated with the expected or demonstrated correlation between values for Monitoring Parameters and values for the COCs. Monitoring pursuant to this paragraph shall be conducted at least every five years.

(h) **Data Record & Format** — The discharger shall maintain a record of water quality analytical data as measured and in a form necessary for implementing the data analysis procedure required pursuant to ¶(g) and ¶(i).

(i) **Data Analysis** — For each Monitoring Point, the discharger shall determine whether there is “measurably significant” (see §20164) evidence of a release from the Unit for any Monitoring Parameter (or COC) specified in the WDRs pursuant to ¶(e) at a frequency specified pursuant to ¶(f) or ¶(g).

(1) In determining whether “measurably significant” (see §20164) evidence of a release from the Unit exists, the discharger shall use the method(s) chosen pursuant to §20415(e)(7). This method(s) shall be used to compare data collected at the Monitoring Point(s) with the background water quality data, except as otherwise provided in §20400(i).

(2) **Determination** — The discharger shall determine whether there is “measurably significant” (see §20164) evidence of a release from the Unit at each Monitoring Point within a reasonable period of time after completion of sampling. The RWQCB shall specify in the WDRs what period of time is reasonable after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of samples.

(3) **RWQCB Finding** — The provisions of this section shall not preclude the RWQCB from making an independent finding that there is “measurably significant” (see §20164) evidence of a release from the Unit. If the RWQCB makes such a finding, the discharger shall comply with the provisions of this section that are required in response to “measurably significant” (see §20164) evidence of a release from the Unit.

(j) **If Release Indicated** — If the discharger determines pursuant to ¶(i) that there is “measurably significant” (see §20164) evidence of a release from the Unit, the discharger:

(1) **Notification** — shall immediately notify RWQCB staff verbally of the finding and shall provide written notification by certified mail within seven days of such determination. The notification shall, for each affected monitoring point, identify the monitoring parameters and constituents of concern that have indicated “measurably significant” (see §20164) evidence of a release from the Unit;

(2) **Retest Optional** — can immediately initiate the verification procedure pre approved by the RWQCB [pursuant to §20415(e)(8)(E)] to verify that there is “measurably significant” (see §20164) evidence of a release from the Unit for a parameter or constituent which has indicated a release at a Monitoring Point; and

(3) **Next Step** — immediately following detection of a release [or after completing the retest under ¶(j)(2)], shall comply with the requirements of ¶(k).

(k) **Responding to Release Discovery** — If a verification procedure, performed pursuant to ¶(j)(2), confirms that there is “measurably significant” (see §20164) evidence of a release from the Unit or if the discharger does not resample the discharger shall perform the following:

(1) **Non-Statistical COC Scan** — if the detection was made based upon sampling and analysis for Monitoring Parameters [under ¶(f)], immediately sample all Monitoring Points in the affected medium at that Unit and determine the concentration of all COC. Because this COC scan does not involve statistical testing, the discharger need collect and analyze only a single water sample from each Monitoring Point in the affected medium. The RWQCB can approve an appropriate subset of Monitoring Points to be sampled for all COCs, based upon the hydrogeologic conditions at the Unit;

(2-4) [Reserved.];

(5) **Amended ROWD Proposing EMP** — within 90 days of determining “measurably significant” (see §20164) evidence of a release, submit to the RWQCB an amended report of waste discharge to establish an evaluation monitoring program meeting the provisions of §20425. The report shall include the following information:

(A) **COC Concentrations** — the maximum concentration of each COC at each Monitoring Point as determined during the most recent COC sampling event [i.e., under ¶(g) or ¶(k)(1)];

(B) **Proposed Monitoring System Changes** — any proposed changes to the water quality monitoring systems at the Unit necessary to meet the provisions of §20425;

(C) **Proposed Monitoring Changes** — any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods, or statistical methods used at the Unit necessary to meet the provisions of §20425; and

(D) **Proposed Delineation Approach** — a detailed description of the measures to be taken by the discharger to assess the nature and extent of the release from the Unit;

(6) **Submit Initial EFS** — within 180 days of determining measurably significant evidence of a release, submit to the RWQCB an engineering feasibility study for a corrective action program necessary to meet the requirements of §20430. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all Constituents of Concern; and

(7) **Optional Demonstration (That Unit Is Not At Cause)** — if the discharger determines, pursuant to ¶(i), that there is “measurably significant” (see §20164) evidence of a release from the Unit at any Monitoring Point, the discharger may demonstrate that a source other than the Unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in the ground water, surface water, or the unsaturated zone. The discharger may make a demonstration pursuant to this subsection in addition to or in lieu of submitting both an amended report of waste discharge pursuant to ¶(k)(5) and an

engineering feasibility study pursuant to ¶(k)(6); however, the discharger is not relieved of the requirements specified in ¶(k)(5) and ¶(k)(6) unless the demonstration made pursuant to this subsection successfully shows that a source other than the Unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone. In making a demonstration pursuant to this subsection, the discharger shall:

(A) **Notification of Intent** — within seven days of determining “measurably significant” (see §20164) evidence of a release, notify the RWQCB by certified mail that the discharger intends to make a demonstration pursuant to this subsection [¶(k)(7)];

(B) **Demonstration Due Date** — within 90 days of determining “measurably significant” (see §20164) evidence of a release, submit a report to the RWQCB that demonstrates that a source other than the Unit caused the evidence, or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone;

(C) **Amended ROWD** — within 90 days of determining “measurably significant” (see §20164) evidence of a release, submit to the RWQCB an amended report of waste discharge to make any appropriate changes to the detection monitoring program; and

(D) **DMP Continues** — continue to monitor in accordance with the detection monitoring program established pursuant to this section.

(I) **Changes in Response to Other Problems** — If the discharger determines that there is significant physical evidence of a release, as described in §20385(a)(3), or that the detection monitoring program does not satisfy the requirements of this section, the discharger shall:

- (1) notify the RWQCB by certified mail within 7 days of such determination; and
- (2) within 90 days of such determination, submit an amended report of waste discharge to make any appropriate changes to the program.

(m) **Changes By RWQCB** — Any time the RWQCB determines that the detection monitoring program does not satisfy the requirements of this section the RWQCB shall send written notification of such determination to the discharger by certified mail, return receipt requested; the discharger shall, within 90 days after receipt of such notification by the RWQCB, submit an amended report of waste discharge to make any appropriate changes to the program.

(n) [Reserved.]

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§20425. SWRCB - Evaluation Monitoring Program. (C15: §2550.9)

(a)(1) **General** — A discharger required pursuant to §20385 to establish an evaluation monitoring program for a Unit shall, at a minimum, comply with the requirements of this section for that Unit.

(2) **Standards** — The evaluation monitoring program shall be used to assess the nature and extent of the release from the Unit and to design a corrective action program meeting the requirements of §20430.

(b) **90 Days To Delineate Release** — The discharger shall collect and analyze all data necessary to assess the nature and extent of the release from the Unit. This assessment shall include a determination of the spacial distribution and concentration of each COC throughout the zone affected by the release. The discharger shall complete and submit

this assessment within 90 days of establishing an evaluation monitoring program. For MSW landfills, the discharger shall comply with the additional notification and monitoring system requirements incorporated by reference into SWRCB Resolution No. 93-62, regarding notification and monitoring relative to offsite or potential off-site migration of waste constituents [see §§258.55(g)(1)(ii & iii) of 40CFR258].

(c) **90 Days to Update EFS** — Based on the data collected pursuant to ¶(b) and ¶(e), the discharger shall update the engineering feasibility study for corrective action required pursuant to §20420(k)(6). The discharger shall submit this updated engineering feasibility study to the RWQCB within 90 days of establishing an evaluation monitoring program.

(d) **90 Days to Amend ROWD** — Based on the data collected pursuant to ¶(b) and on the engineering feasibility study submitted pursuant to ¶(c), the discharger shall submit an amended report of waste discharge to establish a corrective action program meeting the requirements of §20430. The discharger shall submit this report to the RWQCB within 90 days of establishing an evaluation monitoring program.

(1) **MSW Landfills** — For MSW landfills, the discharger shall meet the additional federal notification requirements incorporated by reference by SWRCB Resolution No. 93-62 [see 40CFR258.56(d)].

(2) **Minimum ROWD Update** — This report shall at a minimum include the following information:

(A) **Delineation of Release** — a detailed assessment of the nature and extent of the release from the Unit;

(B) **Water Standard** — a proposed Water Standard under §20390, including any proposed CLGBs under §20400, and all data necessary to justify each such limit;

(C) **Corrective Action Measures** — a detailed description of proposed corrective action measures that will be taken to achieve compliance with the Water Standard proposed for a corrective action program; and

(D) **Monitoring Plan** — a plan for a water quality monitoring program that will demonstrate the effectiveness of the proposed corrective action.

(3) **Coordinated Landfill Gas Control** — For landfills at which the information submitted under ¶(d) indicates that the release likely involves landfill gas, the RWQCB shall notify and shall coordinate, as appropriate, with the EA and (as appropriate) the CIWMB in developing those aspects of the corrective action program involving the design, installation, and operation of the landfill-gas control and monitoring systems at the Unit, such that the resulting gas control program satisfies the needs of all agencies concerned. *[Note: the CIWMB's gas control regulations are in Article 6, Subchapter 4, Chapter 3 (§20920 et seq.)]*

(e) **Ongoing Monitoring** — In conjunction with the assessment conducted pursuant to ¶(b), and while awaiting final approval of the amended report of waste discharge, submitted pursuant to ¶(d), the discharger shall monitor ground water, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the release from the Unit. In conducting this monitoring, the discharger shall comply with the following requirements:

(1) **EMP Monitoring Points** — the discharger shall install water quality monitoring systems that are appropriate for evaluation monitoring and that comply with the provisions of §20415. These water quality monitoring systems can include all or part of existing monitoring systems;

(2) **EMP Monitoring Parameters** — the discharger shall propose for approval by the RWQCB a list of Monitoring Parameters for each medium (ground water, surface water, and the unsaturated zone) to be monitored pursuant to §20415. The list for each medium shall include all hazardous constituents that have been detected in that medium and those physical parameters, waste constituents, and reaction products that provide a reliable indication of changes in water quality resulting from any release from the Unit to that medium. For MSW landfills, the list of Monitoring Parameters must also meet the federal requirements incorporated by reference into SWRCB Resolution No. 93-62 [see §258.54(a) and §258.55(a) of 40CFR258]. The RWQCB shall specify each list of Monitoring Parameters in the WDRs after considering the following factors:

- (A) the types, quantities, and concentrations of COCs in wastes managed at the Unit;
- (B) information that demonstrates, to the satisfaction of the RWQCB, a sufficient correlation between the proposed Monitoring Parameters and the COCs specified for the Unit;
- (C) the mobility, stability, and persistence of COCs [i.e., waste constituents and their (known or anticipated) reaction products];
- (D) the detectability of COCs and of monitored physical parameters; and
- (E) the background values and the coefficients of variation of proposed Monitoring Parameters in ground water, surface water, and the unsaturated zone;

(3) **Monitoring Parameter Analyses** — the discharger shall monitor for the Monitoring Parameters listed in the WDRs pursuant to ¶(e)(2). The discharger shall use data analysis methods and frequencies for collecting samples and for conducting data analyses that comply with §20415(e)(7) for evaluating changes in water quality due to the release from the Unit;

(4) **Five-Yearly COC Monitoring** — in addition to monitoring for the Monitoring Parameters specified pursuant to ¶(e)(3), at least every five years, the discharger shall periodically monitor for all constituents of concern specified in the WDRs to evaluate changes in water quality due to the release from the Unit. The discharger shall use data analysis methods for conducting data analyses that comply with §20415(e)(7) for evaluating changes in water quality due to the release from the Unit;

(5) **Data Records & Format** — the discharger shall conduct water quality monitoring for each Monitoring Parameter and each COC in accordance with §20415(e)(12). The discharger shall maintain a record of water quality analytical data as measured and in a form necessary for the evaluation of changes in water quality due to a release from the Unit;

(6) [Reserved.]; and

(7) **Note and Report Changes** — while awaiting final approval of an amended report of waste discharge [submitted under ¶(e)] to establish a corrective action program, the discharger shall evaluate all water quality data obtained pursuant to ¶(e) with respect to the design criteria for the corrective action program. If the evaluation indicates that the plan for corrective action is insufficient, the discharger shall:

- (A) notify the RWQCB by certified mail within 7 days of such determination; and
- (B) within 90 days of such determination, submit for approval by the RWQCB any appropriate changes to the amended report of waste discharge.

(f) **Optional Demonstration** — The discharger may demonstrate that a source other than the Unit caused the evidence of a release or that the evidence is an artifact caused by

an error in sampling, analysis, or statistical evaluation, or by natural variation in ground water, surface water, or the unsaturated zone. Upon a successful demonstration the RWQCB shall specify that the discharger shall reinstitute a detection monitoring program meeting the requirements of §20420. In making a demonstration under this subsection, the discharger shall:

- (1) **Notification** — notify the RWQCB by certified mail that the discharger intends to make a demonstration pursuant to this subsection;
- (2) **Submit Demonstration Report** — submit a report to the RWQCB that demonstrates that a source other than the Unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone;
- (3) **Submit Amended ROWD** — submit to the RWQCB an amended report of waste discharge to reinstitute a detection monitoring program for the Unit. This report shall propose all appropriate changes to the monitoring program; and
- (4) **Continue EMP Monitoring** — continue to monitor in accordance with the evaluation monitoring program established pursuant to this section.

(g) **Interim CAMs** — The RWQCB shall require interim corrective action measures where necessary to protect human health or the environment.

(h) **Discharger-Initiated EMP Changes** — If the discharger determines that the evaluation monitoring program does not satisfy the requirements of this section, the discharger shall, within 90 days, submit an amended report of waste discharge to make any appropriate changes to the program.

(i) **RWQCB-Initiated EMP Changes** — Any time the RWQCB determines that the evaluation monitoring program does not satisfy the requirements of this section, the RWQCB shall send written notification of such determination to the discharger by certified mail, return receipt requested. The discharger shall, within 90 days of such notification by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304 Water Code; Section 43103, Public Resources Code.

§20430. SWRCB - Corrective Action Program. (C15: §2550.10)

(a) **General** — A discharger required pursuant to §20385 to establish a corrective action program for a Unit shall, at a minimum, comply with the requirements of this section for that Unit.

(b) **Standards** — The discharger shall take corrective action to achieve the following goals: to remediate releases from the Unit; to ensure that the discharger achieves compliance with the Water Standard adopted under §20390 for that Unit. The RWQCB shall specify the Water Standard for corrective action [including any concentration limits greater than background, under §20400(c-g)] in the WDRs.

(c) **Scope of Actions** — The discharger shall implement corrective action measures that ensure that COCs achieve their respective concentration limits at all Monitoring Points and throughout the zone affected by the release, including any portions thereof that extend beyond the facility boundary, by removing the waste constituents or treating them in place. The discharger shall take other action approved by the RWQCB to prevent noncompliance with those limits due to a continued or subsequent release from the Unit,

including but not limited to, source control. The WDRs shall specify the specific measures that will be taken.

(d) **Monitoring** — In conjunction with the corrective action measures, the discharger shall establish and implement a water quality monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program can be based on the requirements for an evaluation monitoring program (under §20425), and shall be effective in determining compliance with the Water Standard (under §20390) and in determining the success of the corrective action measures pursuant to ¶(c).

(e) **Compliance Schedule** — Corrective action measures taken pursuant to this section shall be initiated and completed by the discharger within a period of time specified by the RWQCB in the WDRs.

(f) **Terminating Measures** — Corrective action measures taken pursuant to ¶(c) (*e.g., pumping and treatment of ground water*) may be terminated when the discharger demonstrates to the satisfaction of the RWQCB that the concentrations of all COCs are reduced to levels below their respective concentration limits throughout the entire zone affected by the release.

(g) **Demonstrating Completion of CAP** — After suspending the corrective action measures, pursuant to ¶(f), the Unit shall implement the remaining portions of the Corrective Action Program until an approved Detection Monitoring Program meeting the requirements of §20420 has been incorporated into WDRs and until the discharger demonstrates to the satisfaction of the RWQCB that the Unit is in compliance with the Water Standard (under §20390). If the Unit is an MSW landfill, then this demonstration shall meet the federal requirements incorporated by reference in SWRCB Resolution No. 93-62 [see §258.58(c) of 40CFR258], in lieu of meeting the requirements of ¶(g)(1 & 2). For all other Units, this demonstration shall be based on the following criteria and requirements:

- (1) the concentration of each COC in each sample from each Monitoring Point in the Corrective Action Program for the Unit must have remained at or below its respective concentration limit during a proof period of at least one year, beginning immediately after the suspension of corrective action measures; and
- (2) the individual sampling events for each Monitoring Point must have been evenly distributed throughout the proof period and have consisted of no less than eight sampling events per year per Monitoring Point.

(h) **Semi-Annual Progress Reports** — The discharger shall report, in writing, to the RWQCB on the effectiveness of the corrective action program. The discharger shall submit these reports at least semi annually. More frequent reporting shall be required by the RWQCB as necessary to ensure the protection of human health or the environment.

(i) **Discharger-Initiated CAP Changes** — If the discharger determines that the corrective action program does not satisfy the provisions of this section, the discharger shall, within 90 days of making the determination, submit an amended report of waste discharge to make appropriate changes to the program.

(j) **RWQCB-Initiated CAP Changes** — Any time the RWQCB determines that the corrective action program does not satisfy the requirements of this section, the discharger shall, within 90 days of receiving written notification of such determination by the RWQCB, submit an amended report of waste discharge to make appropriate changes to the program.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13263, 13267, and 13304, Water Code; Section 43103, Public Resources Code.

§20700. CIWMB - Intermediate Cover. (T14:§17684)

(a) Compacted earthen material at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within 180 days to control vectors, fires, odors, blowing litter, and scavenging.

(b) Alternative materials of alternative thickness (other than at least twelve inches of earthen material) for intermediate cover may be approved by the EA with concurrence by the CIWMB, if the owner or operator demonstrates that the alternative material and thickness control vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment.

(c) For waste classification, composition, and liquid percolation requirements of intermediate cover and alternative intermediate cover, refer to the SWRCB requirements set forth in §20705 of this article.

(d) Proposed use of alternative intermediate cover shall be subject to site specific demonstration to establish suitability as intermediate cover. Demonstration projects shall be approved by the EA with concurrence by the CIWMB.

NOTE: Authority Cited: Section 40502, 41781.3, Public Resources Code. Reference: Sections 40508, 43020, 43021 and 43103, Public Resources Code; and Code of Federal Regulations Section 258.21.

§20701. CIWMB - Slope Stability of Daily and Intermediate Cover. (T14:§17678) - [Reserved]

Note: Authority cited: Section 40502 Public Resources Code. Reference: Sections 43020, 43021 and 43103, Public Resources Code.

§20705. SWRCB - Standards for Daily and Intermediate (Interim) Cover. (C15: §2544)

[Note: This section applies in conjunction with CIWMB sections 20680-20701 and addresses cover issues prior to the installation of the final cover. Readers interested in the SWRCB-promulgated requirements for final cover will find them at §21090.]

(a) **Daily & Intermediate** — Interim cover at landfills is “daily cover” and “intermediate cover” as defined by the CIWMB (see §20164).

(b) **Minimize Percolation** — Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through wastes.

(c) **For Class II Waste Piles** — Cover may be required by RWQCBs for Class II wastes piles.

(d) [Reserved]

(e) **Limitations On Cover Materials** — Except for reusable covers that are never incorporated into the Unit, daily and intermediate cover shall only consist of materials:

(1) **Match Unit Classification** — which meet the classification criteria for wastes that can be discharged to that landfill. Therefore, a material that would be classified as a designated waste cannot be utilized for daily or intermediate cover at a Class III landfill unless that material is approved for discharge (as a waste) to that landfill pursuant to §20200(a)(1); and

(2) **Composition** — whose constituents (other than water) and foreseeable breakdown byproducts, under the chemical (including biochemical) and temperature conditions which it is likely to encounter within the landfill, either:

(A) for non-composite lined portions of the Unit, are mobilizable only at concentrations which would not adversely affect beneficial uses of waters of the state, in the event of a release; or

(B) for composite-lined portions of the Unit, are listed as COCs in the Unit's water quality protection standard (Water Standard), created pursuant to §20395.

(f) **Dust Control** — The requirements of §21090(a)(5) regarding the discharge of leachate, gas condensate, and other liquids to final-covered portions of the Unit also apply to the discharge of liquids to daily and intermediate cover, including discharges made for the purpose of dust control.

NOTE: Authority cited: Section 1058, Water Code; Reference: Sections 13172 and 13360, Water Code; Section 43103, Public Resources Code.

§20950. SWRCB - General Closure and Post-Closure Maintenance Standards Applicable to Waste Management Units (Units) for Solid Waste. (C15: §2580)

[Note: For landfills, see also §21790 et seq.]

(a) General.

(1) **Applicability** — Dischargers who are implementing final closure of a new or existing classified solid waste management unit (Unit) or are implementing complete final closure of a portion of a solid waste landfill [incremental closure under §21090(b)(1)(D)] shall comply with the provisions of this article. The discharger shall carry out both mandatory closure (under §22190) and normal closure (e.g., at the end of the active life of the Unit) in accordance with a closure and post-closure plan (under §21769) which the RWQCB finds meets all applicable requirements that section and of this Subchapter, including but not limited to applicable performance standards under &(a)(2). For the purposes of the RWQCB, the final closure plan the discharger submits under this section constitutes an amendment to the report of waste discharge (under §21750). If a portion of a Unit was completely closed in accordance with an approved closure plan by November 27, 1984, the cover over the closed portion does not need to be modified to conform to the SWRCB's additional closure requirements in these regulations, unless monitoring data indicate impairment of beneficial uses of ground water. Classified Units shall be closed according to an approved closure and post closure maintenance plan which provides for continued compliance with the applicable SWRCB-promulgated standards for waste containment and precipitation and drainage controls in Article 4, Subchapter 2, Chapter 3 of this subdivision (§20310 et seq.), and the monitoring program requirements in Article 5, Subchapter 2, Chapter 3 of this subdivision (§20380 et seq.), throughout the closure period and the post closure maintenance period. Relative to the applicable SWRCB-promulgated requirements of this title, the post closure maintenance period shall extend as long as the wastes pose a threat to water quality; for Units concurrently regulated by the RWQCB and by other state agencies (including the agents of such agencies), the RWQCB's finding that the waste in the Unit no longer poses a threat to water quality shall release the discharger only from the need to comply with the SWRCB-promulgated portions of this title, for that Unit. For land treatment facilities, relative only to the applicable SWRCB-promulgated requirements of this title, the post-closure maintenance period shall extend until treatment is complete.

(2) **Performance Standards** — The performance standards applicable to closure of a Unit and, for Units that are not clean-closed, to post-closure maintenance at the Unit are as follows:

(A) **Unit Closed as a Landfill** — for landfills that are not clean-closed and for waste piles and surface impoundments that are closed as a landfill:

1. **Closure** — for landfills and for waste piles and surface impoundments closed as landfills, the goal of closure, including but not limited to the installation of a final cover, is to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas. For such Units, after closure, the final cover constitutes the Unit's principal waste containment feature; and

2. **Post-Closure Maintenance** — the goal of post-closure maintenance at such Units is to assure that the Unit continues to comply with the performance standard of &(a)(2)(A)1. until such time as the waste in the Unit no longer constitutes a potential threat to water quality;

(B) **Unit Clean-Closed** — for Units that are clean-closed, the goal of closure is to physically remove all waste and contaminated materials from the Unit and from its underlying and surrounding environs, such that the waste in the Unit no longer poses a threat to water quality. Successful completion of clean-closure eliminates the need for any post-closure maintenance period and removes the Unit from being subject to the SWRCB-promulgated requirements of this subdivision; and

(C) **LTUs** — for land treatment units (LTUs):

1. **Closure** — the goal of closure is to initiate the post-closure maintenance period;

2. **Post-Closure Maintenance** — the goal of post-closure maintenance is to continue Unit operations, without discharging additional waste to the Unit, in a manner which maximizes the degradation rate of the waste remaining within the treatment zone.

(b) **Closure Supervision** — Closure shall be under the direct supervision of a registered civil engineer or a certified engineering geologist.

(c) **Unit Type** — Class II Units and Class III landfills shall be closed in accordance with one of the following options:

(1) **landfill:** pursuant to §21090;

(2) **surface impoundment:** pursuant to §21400;

(3) **waste pile:** pursuant to §21410; or

(4) **land treatment:** pursuant to §21420.

(d) **Surveying Monuments** — Closed Units shall be provided with at least two permanent monuments installed by a licensed land surveyor or a registered civil engineer, from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the post closure maintenance period.

(e) **Vegetation** — For landfills and for waste piles and surface impoundments that are closed as landfills, all vegetation for the closed Unit's vegetative cover layer shall meet the requirements of §21090(a)(3)(A)1. [in cases where the Unit does not utilize the mechanically erosion resistant layer of §21090(a)(3)(A)2.].

(f) **Closure/Post-Closure Financial Assurance** — The RWQCB shall require the discharger to establish an irrevocable fund (or to provide other means) for closure and post-closure maintenance (see Articles 1 & 2 of Chapter 6 of this subdivision) to ensure closure and post closure maintenance of each classified Unit in accordance with an approved plan. *[Note: corrective action financial assurance standards continue to apply]*

throughout closure and post-closure maintenance {see §20380(b) & §22222.}} For landfills required by the CIWMB to have financial assurance mechanisms under Chapter 6, the RWQCB shall assist the CIWMB:

(1) by verifying the amount of coverage proposed by the discharger to meet applicable SWRCB-promulgated requirements of this subdivision [*Note: the CIWMB is responsible for the review, approval, and management of the financial assurance mechanisms for such Units*]; and

(2) by participating in the CIWMB's periodic review of the adequacy of financial assurance mechanisms, and in any enforcement action that such review reveals, as necessary.

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13172, Water Code; Section 43103, Public Resources Code.

§21090. SWRCB - Closure and Post-Closure Maintenance Requirements for Solid Waste Landfills. (C15: §2581 // T14: §17777, §17779) [**Note: For SWRCB's final cover performance standard, see §20950(a)(2)(A); for related CIWMB requirements, see §21790 et seq.**]

(a) **Final Cover Requirements** — Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one, and shall have a minimum of one fifteen-foot wide bench for every fifty feet of vertical height. Designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component [under ¶(a)(2)], shall have these aspects of their design specifically supported in the slope stability report required under §21750(f)(5). The RWQCB can require flatter slopes or more benches where necessary to ensure preservation of the integrity of the final cover under static and dynamic conditions. The cost estimate, under §21769, for the final cover shall include a description of the type and estimated volume (or amount, as appropriate) of material needed for each component of the final cover based upon the assumption that all materials will need to be purchased; if on-site materials are to be used, the submittal shall include test results confirming the availability of such on-site materials and their suitability for such use. The RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the Unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards under ¶(a)(1-3).

(1) **Foundation Layer** — Closed landfills shall be provided with not less than two feet of appropriate materials as a foundation layer for the final cover. These materials may be soil, contaminated soil, incinerator ash, or other waste materials, provided that such materials have appropriate engineering properties to be used for a foundation layer. The foundation layer shall be compacted to the maximum density obtainable at optimum moisture content using methods that are in accordance with accepted civil engineering practice. A lesser thickness may be allowed for Units if the RWQCB finds that differential settlement of waste, and ultimate land use will not affect the structural integrity of the final cover.

(2) **Low-Hydraulic-Conductivity Layer** — In order to protect water quality by minimizing the generation of leachate and landfill gas, closed landfills shall be provided with a low-hydraulic-conductivity (or low through-flow rate) layer consisting of not less than one foot of soil containing no waste or leachate, that is placed on top of the foundation layer and compacted to attain an hydraulic conductivity of either 1×10^{-6} cm/sec (i.e., 1 ft/yr) or less, or equal to the hydraulic conductivity of any bottom liner

system or underlying natural geologic materials, whichever is less permeable, or another design which provides a correspondingly low through-flow rate throughout the post-closure maintenance period. Hydraulic conductivity determinations for cover materials shall be as specified in Article 4, Subchapter 2, Chapter 3 of this subdivision [§20310 et seq.], but using water as the permeant, and shall be appended to the closure and post-closure maintenance report. For landfills or portions thereof in which the final cover is installed after July 18, 1997, as part of the final closure plan for the Unit, the discharger shall provide a plan, as necessary [see ¶(a)(4)], for protecting the low-hydraulic-conductivity layer from foreseeable sources of damage that could impair its ability to prevent the throughflow of water (*e.g., desiccation, burrowing rodents, or heavy equipment damage*).

(3) **Erosion-Resistant Layer** — The low-hydraulic-conductivity layer of ¶(a)(2) shall be directly overlain by an erosion-resistant layer, as follows.

(A) Closed landfills shall be provided with an uppermost cover layer consisting of either:

1. **Erosion-Resistance Via a Vegetative Layer** — a vegetative layer consisting of not less than one foot of soil which:

- a. contains no waste (including leachate);
- b. is placed on top of all portions of the low-hydraulic-conductivity layer described in ¶(a)(2);
- c. is capable of sustaining native, or other suitable, plant growth;
- d. is initially planted — and is later replanted as needed to provide effective erosion resistance — with native or other suitable vegetation having a rooting depth not exceeding the depth to the top of the low-hydraulic-conductivity layer described in ¶(a)(2). For any proposed vegetative cover, the discharger shall propose a species mix which harmonizes with the proposed post-closure land use, and which requires as little long-term maintenance as feasible by virtue of its tolerance of the vegetative layer's soil conditions (*e.g., the presence of landfill gas*), its resistant to foreseeable adverse environmental factors (*e.g., climate, disease, and pests*), its rapidity of germination and growth, its persistence and ease of self-propagation, its high percentage of surface coverage (sufficient to prevent surface erosion), and its minimal need for irrigation and maintenance; and
- e. by virtue of its composition, its maintained vegetation density, and its finished-and-maintained grade, will be resistant to foreseeable erosion effects by wind-scour, raindrop impact, and runoff; or

2. **Mechanically Erosion-Resistant Layer** — an erosion- and ultraviolet light-resistant layer which, by virtue of its composition and finished-and-maintained grade, resists foreseeable erosion effects by wind-scour, raindrop impact, and runoff (*e.g., a 1-foot thick layer of cobbles, the interstices of which are filled with gravel*).

(B) The discharger shall maintain all components of the erosion-resistant layer throughout the post-closure maintenance period, and, if closed after July 18, 1997, shall implement such maintenance in accordance with an approved Cover-Integrity Monitoring and Maintenance Program, pursuant to ¶(a)(4).

(4) **Cover Maintenance Plan & Annual Cost Estimate** — The final cover shall be designed and constructed to function with the minimum maintenance possible. For landfills and for other Units closed as landfills, if the closure occurs after July 18, 1997,

the preliminary and final closure and post-closure maintenance plan shall incorporate a cover-integrity monitoring and maintenance program which includes at least the following components. The annualized post-closure maintenance plan cost analysis [of §21769(c)] shall include an itemized estimate of the annual cost of each component:

(A) **Periodic Leak Search** — a schedule for carrying out periodic monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively identifying and repairing breaches in that layer *[for example and where allowed, by temporarily discontinuing active gas extraction and using surface gas probes or inserted soil gas probes to identify locations where landfill gas is emerging]*;

(B) **Periodic Identification of Other Problem Areas** — a schedule for periodically identifying and addressing other cover problems, including at least:

1. areas of the vegetative cover, if any, requiring replanting;
2. eroded portions of the erosion-resistant layer requiring regrading, repair, or (for areas where the problem persistently reoccurs) increased erosion resistance;
3. eroded portions of the low-hydraulic-conductivity layer needing repair or replacement;
4. areas lacking free drainage;
5. areas damaged by equipment operation;
6. [Reserved]; and
7. localized areas identified in the iso-settlement survey [of ¶(e)(2)] as having sustained repeated or severe differential settlement.

(C) **Prompt Cover Repair** — a plan for repairing, in a timely manner, any breach or other cover problem discovered pursuant to ¶(a)(4)(A or B). For any repairs of the low-hydraulic-conductivity layer, this plan shall either contain a Construction Quality Assurance (CQA) plan [under §21710(a)(5)], or shall accomplish this goal through the incorporation-by-reference of appropriate portions of an approved CQA plan; and

(D) **Vegetation Maintenance** — for a final cover utilizing a vegetated erosion resistant layer [under ¶(a)(3)(A)1.], a plan for maintaining this vegetative cover, including fertilization, irrigation, elimination of species that violate the rooting depth limit [of ¶(a)(3)(A)1.d.], replanting, and irrigation system maintenance.

(5) Discharges of Liquids to Covers.

(A) **Leachate and Gas Condensate** — The discharge of leachate, gas condensate, or other waste liquids to any final-covered portion of an MSW landfill is subject to the restrictions under §20200(d). *[Note: see also 1) definitions of “leachate” and “landfill gas condensate” in §20164, and 2) §20705(f), re: daily and intermediate cover.]*

(B) **Other Liquids** — The discharger shall moderate the application rate of liquids discharged to the cover for dust control, irrigation of the vegetative layer, or other non-disposal purpose in a manner that minimizes the potential for throughflow to the underlying waste. The RWQCB can establish cover throughflow monitoring requirements (e.g., *via intermittent tensiometer measurements of the cover*) to ensure compliance with this requirement.

(6) **Stability Analysis** — For any portions of the final cover installed after July 18, 1997, for which the RWQCB has not approved a slope and foundation stability report on or before that date, the discharger shall meet the requirements of §21750(f)(5).

(b) Grading Requirements.

(1) Prevent Ponding, Erosion, and Run-On.

(A) **General** — The final drainage plan shall be included as part of the approved final closure plan for the Unit. In spite of differential settlement, the final cover of closed landfills (including waste piles and surface impoundments closed as landfills) shall be designed, graded, and maintained to prevent ponding and to prevent soil erosion due to high run-off velocities. Except as provided in ¶(b)(1)(B), all portions of the final cover shall have a slope of at least three percent. *[Note: for additional requirements concerning final grading, see §21142.]*

(B) **Flatter Areas** — The RWQCB can allow portions of the final cover to be built with slopes of less than three percent if the discharger proposes an effective system for diverting surface drainage from laterally-adjacent areas and preventing ponding in the allowed flatter portion. Analyses submitted in support of such a proposal shall take into account the design storm intensity for the Unit [under §20365].

(C) **Qualified Professional** — The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist to meet the performance standards of ¶(b)(1)(A and B), taking into consideration pertinent natural and constructed topographic features (including any related to the proposed post-closure land use), and climate.

(D) **Prompt Incremental Closure** — This paragraph applies unless the RWQCB has approved, as part of the final closure plan, a waiting period (for installation of the final cover) not to exceed five years after the date a portion of the landfill reaches final elevation, in order to avoid subjecting the final cover to potential damage from the high rate of differential settlement that so often occurs during the first few years following the final receipt of waste. To the extent feasible, based on site-specific factors, the complete closure, including final grading and installation of the final cover, for each portion of the landfill shall be implemented as soon as possible after that portion reaches final elevation. *[For additional related requirements, see ¶(d), §21110, §21120.]*

(E) **CQA** — After July 18, 1997, both the initial construction of the final cover and any later repair work that involves the cover's low-hydraulic-conductivity layer [of ¶(a)(2)] shall be carried out in accordance with an approved CQA plan [see §20323 & §20324].

(2) **Steeper-Sloped Portions** — Areas with slopes greater than ten percent, areas having surface drainage courses, and areas subject to erosion by water or wind shall be protected from erosion or shall be designed and constructed to prevent erosion.

(3) **Precipitation & Drainage Plan** — The final closure plan for the Unit shall incorporate a precipitation and drainage control plan for the closed landfill, and shall meet the requirements of §20365.

(c) **General Post-Closure Duties** — Throughout the post closure maintenance period, the discharger shall:

(1) maintain the structural integrity and effectiveness of all containment structures, and maintain the final cover as necessary to correct the effects of settlement or other adverse factors;

(2) continue to operate the leachate collection and removal system as long as leachate is generated and detected;

(3) maintain monitoring systems and monitor the ground water, surface water, and the unsaturated zone in accordance with applicable requirements of Article 1, Subchapter 3, Chapter 3, Subdivision 1 (§20380 et seq.);

- (4) prevent erosion and related damage of the final cover due to drainage; and
- (5) protect and maintain surveyed monuments [installed under §20950(d)].

(d) **Landfill Closure Deadline** — For landfill Units subject to the CIWMB-promulgated provisions of this division, any closure deadline extensions the discharger proposes to the EA (under §21110) shall be effective only after concurrence by the RWQCB.

(e) **Final Cover Surveys.**

This subsection [i.e., through ¶(e)(3)] applies only to landfills, or portions thereof, that are final-closed after July 18, 1997.

(1) **Initial Survey and Map** — For a closed landfill (including a surface impoundments or waste pile closed as a landfill), upon completion of all closure activities for the Unit [or portion thereof, pursuant to ¶(b)(1)(D)], the discharger shall conduct an aerial photographic survey [or alternative survey under ¶(e)(3)] of the closed portions of the Unit and of its immediate surrounding area, including at least the surveying monuments [of §20950(d)]. The data so obtained shall be used to produce [or to augment, in the case of incremental closure under ¶(b)(1)(D)] a topographic map of the site at a scale and contour interval sufficient to depict the as-closed topography of each portion of the Unit, and to allow the early identification of any differential settlement, pursuant to ¶(e)(2). For landfills undergoing incremental closure [under ¶(b)(1)(D)], the survey for each closed portion of the landfill shall be carried out immediately following completion of closure activities for that portion of the landfill; such data shall be used to create or augment a map showing the closure date and as-closed topography of each portion of the Unit. The map produced pursuant to this paragraph shall act as a base-line against which to measure the total settlement, through time, of all portions of the final cover since the date when that landfill, or portion thereof, was closed. Upon completion of this topographic map (or, in the case of incremental closure, of each revision thereof), the discharger shall submit a copy to the RWQCB, the CIWMB, and the EA.

(2) **Five-Yearly Iso-Settlement Map** — At least every five years after completing closure of the landfill [or of the last remaining portion, for landfills undergoing incremental closure under ¶(b)(1)(D)], the discharger shall produce and submit to the RWQCB an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. Therefore, for each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [of ¶(e)(1)], and shall indicate all areas where visually noticeable differential settlement [noted under ¶(e)(4)] may have been obscured by grading operations. The map shall be drawn to the same scale and contour interval as the topographic map under ¶(e)(1), but showing the current topography of the final cover and featuring overprinted isopleths indicating the total settlement to-date. The RWQCB shall apply the requirements of this paragraph only to a closed landfill which the RWQCB finds is likely to undergo differential settlement of such magnitude as to impair either the Unit's containment features (e.g., final cover) or the free drainage of surface flow. *[Note: The RWQCB's choosing to forego requiring iso-settlement mapping for the purpose of water quality protection does not preclude the CIWMB/EA from requiring such mapping for other purposes (e.g., structural integrity considerations regarding a building sited on top of the closed landfill); see §21142(b).]*

(3) **Alternative Surveying Techniques** — The RWQCB can approve the use of any alternative technique (to an aerial survey) for producing the maps required by ¶(e)(1 & 2), so long as the maps so produced meet the performance standards of ¶(e)(1 & 2).

(4) **Tracking Differential Settlement** — Prior to conducting periodic grading operations on the closed landfill [under ¶(b)(1)(A)], the discharger shall note on a map of the landfill the approximate location and outline of any areas where differential settlement is visually obvious. Each five-yearly iteration of the iso-settlement map [under ¶(e)(2)] shall show all areas where differential settlement has been noted (under this paragraph) since the previous map submittal, and shall highlight areas of repeated or severe differential settlement. Map notations and delineations made pursuant to this paragraph need not be surveyed, so long as all areas where differential settlement was visually identifiable prior to regrading can be relocated. Such notation and delineation shall be made by, or under the supervision of, a registered civil engineer or registered geologist.

(f) **Optional Clean-Closure** — Notwithstanding any other SWRCB-promulgated closure or post-closure maintenance requirement in this subdivision, a discharger proposing to clean-close a landfill shall submit a clean-closure plan meeting the requirements of this subsection. *[Note: see also CIWMB's additional landfill clean-closure requirements under §21810.]* The purpose of clean-closure is to render the landfill (including all surrounding environs contaminated by waste released from the landfill) no longer capable of posing a threat to water quality. The purpose of a clean-closure plan is to propose a series of actions, including an accurate estimate of the cost of each such action, that will meet the requirements of this paragraph. Upon the RWQCB's finding that the discharger has successfully completed clean-closure under this paragraph, the landfill shall no longer be subject to the SWRCB-promulgated requirements of this title. Nevertheless, if the RWQCB finds that the discharger's attempt to clean-close the landfill does not meet the requirements of this subsection, the discharger shall close the landfill and carry out post-closure maintenance in the same manner as though the discharger had not attempted clean-closure. For the purpose of this paragraph, the discharger shall have successfully clean-closed a landfill only if:

- (1) all waste materials, contaminated components of the containment system, and affected geologic materials — including soils and rock beneath and surrounding the Unit, and ground water polluted by a release from the Unit — are either removed and discharged to an appropriate Unit or treated to the extent that the RWQCB finds they no longer pose a threat to water quality; and
- (2) all remaining containment features are inspected for contamination and, if contaminated, discharged in accordance with ¶(f)(1).

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13172, Water Code; Section 43103, Public Resources Code.

§21132. SWRCB - Landfill Emergency Response Plan Review. (new)

(a) **Review & Notification** — For landfills, the RWQCB shall review the emergency response plan, in coordination with the Enforcement Agency (**EA**), to assure that no proposed response to a foreseeable emergency will result in a threat, or increased threat, to beneficial uses of waters of the state.

(b) **Submittal** — For landfills for which the CIWMB requires an emergency response plan (*e.g., pursuant to §21130*), the discharger shall submit a copy of that plan, including

any proposed amendments thereto, to the RWQCB. For landfills having an existing emergency response plan that has already been reviewed by the RWQCB, the discharger need not resubmit the plan for review by the RWQCB until such time as the plan is amended. For landfills having an existing emergency response plan (i.e., approved by the EA) that has not as yet been reviewed by the RWQCB, the discharger shall submit a current copy of the plan for RWQCB review prior to July 18, 1998. For proposed emergency response plans (including proposed amendments to an existing plan), this submittal shall occur at the same time as the discharger submits the proposed plan to the EA.

(c) **Coordinate On New Response** — In the event that the discharger proposes to respond to an emergency in a manner other than specified in the emergency response plan, the RWQCB shall coordinate with the EA to assure that the proposed response does not pose a threat to water quality.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13226, 13227, 13263, 13267, Water Code; Section 43103, Public Resources Code.

§21585. SWRCB - Joint Technical Document (JTD). (new)

Regulations in this section were promulgated by the State Water Resources Control Board (**SWRCB**), are administered by the appropriate Regional Water Quality Control Board (**RWQCB**) through the issuance of waste discharge requirements (**WDRs**) or other enforceable orders, and are applicable both to the RWQCB and to the owner or operator of a waste management unit (**Unit**) for the treatment, storage, or disposal of solid waste, in cases where the Unit is jointly regulated by the RWQCB and by one or more other state agencies.

(a) **JTD Addresses All Post-CUP Permitting Agency Requirements** — After July 18, 1997, for any Unit jointly regulated by the RWQCB and another state agency (or agencies), the report of waste discharge (**ROWD**) submitted to the RWQCB in support of the development or revision of WDRs for that Unit shall be in the form of a joint technical document (**JTD**) which includes all applicable information required under Article 4 of Subchapter 3 of this chapter (§21710 et seq.), in addition to all information necessary to support the development (or modification, as appropriate) and issuance of any state or local agency permits, other than the conditional use permit, that are required to operate the Unit (including but not limited to the lateral expansion of any Unit).

(1) **JTD Submittal Date** — For new Units for which the ROWD is initially submitted (as part of the application for WDRs) after July 18, 1997, the discharger shall submit the ROWD in the form of a JTD when applying for WDRs for the Unit. For all other new Units and for existing Units, the discharger need not reorganize and resubmit, as a JTD, those portions of the ROWD submitted prior to July 18, 1997. For new and existing Units, after July 18, 1997, except for scheduled monitoring reports, each submittal regarding the Unit, whether initiated by the discharger or requested by RWQCB, shall be made in the form of a separate addendum to the JTD, pursuant to ¶(a)(4).

(2) **JTD Scope** — The discharger is responsible for identifying all state and local agencies for which the JTD will serve as a joint permitting information document, pursuant to ¶(a). Nevertheless, for a landfill, the list of agencies addressed in the JTD shall include at least the RWQCB, the CIWMB, the EA, and the AQMD or APCD.

(3) **Integration** — The discharger is free to organize the JTD in any manner that maximizes the readability and compactness of the document. Nevertheless, to the extent

feasible, with respect to any portion of the JTD that discusses a subject of regulatory concern to more than one agency, the discharger shall integrate the discussion to satisfy the concerns of all agencies concerned with that subject. Likewise, to the extent feasible, for facilities having more than one Unit, the JTD shall address topics which are germane to all Units at the facility (*e.g., the hydrogeology of the facility and surrounding area*) in a manner which integrates and incorporates all concerns applicable to each individual Unit and to the facility in general.

(4) **JTD Addenda** — After July 18, 1997, each submittal made to any permitting agency encompassed by the JTD shall be in the form of a numerically-sequential addendum to the JTD (i.e., Addendum 76 would be followed by Addendum 77). For any given topic being addressed by a given addendum, the discharger shall send a copy of that addendum simultaneously to each permitting agency listing that topic in their agency-specific JTD Index, and shall include an updated JTD page listing for each Water Board JTD index line-item [under ¶(b)] that is addressed by that addendum.

(b) **Water Board (JTD) Index** — As of July 18, 1997, each RWQCB shall make available to the discharger (both in hard copy and on magnetic media) a JTD index (**Water Board Index**) listing, by unique line-item number, each topic which the JTD must address to provide the RWQCB information needed to write and adopt or revise WDRs. For each line item (i.e., for each separately listed topic) in the Water Board Index, the discharger shall list all JTD pages (by page number or ranges thereof) addressing that topic. In cases where the preliminary or final closure and post-closure maintenance plan is submitted as a separable part of the JTD, as allowed by §21769(a), the component parts of the plan shall nevertheless be listed as part of the JTD index.

(c) **Coordination** — Upon the submittal of a new JTD or addendum, the RWQCB shall concentrate the initial review upon those line-items in the Water Board Index which are coded as being of joint interest with other agencies. Regarding all such joint-interest line-items in the Water Board Index, the RWQCB shall coordinate with staff from the other interested agencies, as appropriate, to ensure that WDRs (or proposed changes thereto) do not duplicate or conflict with the requirements of the other agencies.

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13140, 13146, 13172, Water Code; Section 43103, Public Resources Code.

§21710. SWRCB - Report Of Waste Discharge (ROWD) and Other Reporting Requirements. [C15: §2590]

(a) **General** — Any person discharging or proposing to discharge solid waste to land where water quality could be affected as a result of such discharge shall submit to the RWQCB a report of waste discharge (**ROWD**), unless the report is waived by the RWQCB; nevertheless, the RWQCB shall not waive the report for any MSW landfill subject to regulation under SWRCB Resolution No. 93-62. After July 18, 1997, any person proposing to discharge solid waste at a waste management unit (**Unit**) that is subject to regulation by both the CIWMB/EA and the RWQCB shall make all ROWD submittals (including updates to a previously submitted ROWD) in the form of a Joint Technical Document (**JTD**), as provided in §21585. After July 18, 1997, this reporting requirement also applies to the expansion of the RWQCB-Permitted Area of a new or existing Unit and to the development of new Units at an existing facility. Dischargers shall submit any applicable information required by this article to the RWQCB upon

request. Dischargers shall provide information on waste characteristics, geologic and climatologic characteristics of the Unit and the surrounding region, installed features, operation plans for waste containment, precipitation and drainage controls, and closure and post closure maintenance plans as set forth in §§21740, 21750, 21760, and 21769. For non-MSW Class III landfills, the RWQCB can waive the submittal of information it deems unnecessary to rendering a decision on the issuance of appropriate WDRs.

(1) [Reserved.]

(2) **Final Closure/Post-Closure Plan** — For Class II and III Units, a Final Closure and Post Closure Maintenance Plan shall be submitted with the closure notice required by &(c)(5), unless, for landfill Units, the CIWMB requires submittal at an earlier date.

(3) **Waiving Post-Closure Maintenance** — The RWQCB can waive the post closure portion of the report if the discharger successfully completes clean-closure pursuant to §21090(f) [for landfills], §21400(b)(1) [for surface impoundments], or §21410(a)(1) [for waste piles], or if the RWQCB finds that post closure maintenance is not necessary to prevent adverse impacts on waters of the state; provided that the RWQCB shall not waive post-closure maintenance for an MSW landfill subject to SWRCB Resolution No. 93-62 unless the Unit has been clean-closed. [Note: see also §21900 for corresponding CIWMB requirements.]

(4) **Notification of Change** — The discharger shall notify the RWQCB of changes in information submitted under the applicable SWRCB-promulgated requirements of this division, including any material change in: the types, quantities, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. The discharger shall notify the RWQCB a reasonable time before the changes are made or become effective. No changes shall be made without RWQCB approval following authorization for closure pursuant to the site closure notice required by &(c)(5).

(5) **Construction Quality Assurance Plan (CQA Plan).**

(A) **Submittal (new Units)** — For Units constructed (or reconstructed) after July 18, 1997, the discharger shall submit a preliminary CQA Plan as an integral or separable part of the initial ROWD/JTD under &(a). The discharger shall make such changes to the CQA Plan as may be necessary to maintain continued compliance with §§20323 and 20324 (*e.g., in the event of design changes, or as directed by the RWQCB*). For a revised CQA Plan, the discharger shall submit the revised portions of the plan at least two weeks before beginning construction of any liner system or cover system.

(B) **Submittal (existing Units)** — For existing Units that do not have a CQA Plan meeting all the foregoing requirements, the discharger shall submit such a plan, or submit suitable modifications to an existing plan, prior to constructing, installing, or modifying any engineered feature at the Unit. In the absence of such construction, installation, or modification, the discharger shall make this submittal as part of whichever of the following documents is submitted first:

1. the final closure and post-closure plan under &(a)(2); or
2. in the event that a release is discovered, as part of the proposed corrective action program under §20425(d).

(b) **ROWD/WDR Out-Of-Date or Nonexistent** — Dischargers who own or operate a new or existing Unit which has not been classified under previous versions of these regulations, or for which the discharger has not submitted a report of waste discharge

(**ROWD**) before July 18, 1997, shall notify the RWQCB of the existence of their Unit prior to July 18, 1998, and shall submit a ROWD which complies with &(a) before July 18, 1999, together with the appropriate filing fee. Dischargers who own or operate an existing Unit for which WDRs were last revised before November 27, 1984, shall submit a ROWD which complies with &(a) to the RWQCB, together with the appropriate filing fee, on request.

(c) **Notification.**

(1) **Change of Ownership** — The discharger shall notify the RWQCB in writing of any proposed change of ownership or responsibility for construction, operation, closure, or post closure maintenance of a Unit. This notification shall be given prior to the effective date of the change and shall include a statement by the new discharger that construction, operation, closure, and post closure maintenance will be in compliance with any existing WDRs and any revisions thereof. The RWQCB shall amend the existing WDRs to name the new discharger.

(2) **Response to Failure** — The discharger shall promptly notify the RWQCB of any slope failure, occurring at the Unit. The discharger shall promptly correct any failure which threatens the integrity of containment features or the Unit, after approval of the method, in accordance with a schedule established by the RWQCB.

(3) **Leachate Production Change Notification** — The discharger shall notify the RWQCB within seven days if fluid is detected in a previously dry leachate collection and removal system or unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a leachate collection and removal system.

(4) **Monitoring Reports and Notifications** — The discharger shall comply with the notification (and other submittal) requirements in Article 1, Subchapter 3, Chapter 3 of this division (§20380 et seq.).

(5) **Notification of Closure.**

(A) **Landfills** — For landfills subject to the CIWMB-promulgated regulations of this division, the discharger shall notify the RWQCB that the Unit is to be closed, and shall provide such notice either at the same time as for the CIWMB, under §21110, or 180 days prior to beginning any final closure activities (for the entire Unit or portion thereof), whichever is sooner.

(B) **Other Units** — For Units not subject to the CIWMB-promulgated regulations of this division, the discharger shall notify the RWQCB of Units to be closed at least 180 days prior to beginning any final closure activities, unless the RWQCB specifies a shorter interval in the WDRs for such a Unit.

(C) **Affirmation** — The notice provided pursuant to &(c)(5)(A or B) shall include a statement that all closure activities will conform to the most recently approved closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations.

(6) **Closure Completion Notice** — The owner or operator of a Unit shall notify the RWQCB within 30 days after the completion of all closure activities for a Unit [or portion thereof, in the case of a landfill undergoing incremental closure under §21090(b)(1)(D)]. The discharger shall certify under penalty of perjury that all closure activities were performed in accordance with the most recently approved final closure plan and in accordance with all applicable regulations. The discharger shall certify that

closed Units shall be maintained in accordance with an approved post closure maintenance plan unless post closure maintenance has been waived pursuant to &(a)(3).

(d) **Appropriate Professional** — Any report submitted under this section or any amendment or revision thereto which proposes a design or design change (or which notes occurrences) that might affect a Unit's containment features or monitoring systems shall be approved by a registered civil engineer or a certified engineering geologist.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13260 and 13267, Water Code; Section 43103, Public Resources Code.

§21720. SWRCB - Waste Discharge Requirements (WDRs). (C15: §2591)

(a) **WDR Scope & Purpose** — The RWQCB shall adopt waste discharge requirements (WDRs) that implement the applicable provisions of this title.

(b) **WDR Revision** — The RWQCB shall revise WDRs as necessary to implement the provisions of this title.

(c) **Reclassification** — Unit classifications and WDRs for existing Units shall be fully reviewed in accordance with schedules established by the RWQCB. The WDRs shall be revised to incorporate reclassification and retrofitting requirements as provided in §20080(e) and §20310, and to comply with applicable monitoring and response programs required under Article 1, Subchapter 3, Chapter 3 of this division (§20380 et seq.). The RWQCB shall specify in WDRs the schedule for retrofitting of existing Units. All retrofitting shall be complete within five years from the issuance of the revised WDRs.

(d) **Local Agencies** — WDRs for new Units or for expansion of Units beyond the RWQCB-Permitted Area on July 18, 1997, shall not be effective until the RWQCB is notified that all local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved use of the site for discharges of waste to land.

(e) **Consolidation of Requirements at Multi-Unit Facilities** — At the discretion of the RWQCB, WDRs for all Units in a single facility can be combined into a single set of WDRs applicable to the facility as a whole and to each respective Unit within the facility, but only if the requirements that apply to each respective Unit are clearly identified. Likewise, the RWQCB can consolidate the requirements relating to precipitation and drainage control systems for two or more adjacent Units, provided that such consolidated requirements reflect standards for the highest classification of Unit involved. Each solid waste Unit at a facility shall have its own respective monitoring program(s) under Article 1, Subchapter 3, Chapter 3 of this division (§20380 et seq.); nevertheless, Units can share Monitoring Points, Background Monitoring Points, sampling efforts, and reporting periods to the degree that the RWQCB concurs that such sharing does not interfere with achieving the goal of the monitoring program(s) at each respective Unit.

(f) **Records** — The discharger shall be required to maintain legible records of the volume and type of each waste discharged at each Unit and the manner and (for Units other than surface impoundments) location of discharge. Such records shall be on forms approved by the SWRCB or RWQCB and shall be maintained at the waste management facility until the beginning of the post closure maintenance period. These records shall be available for review by representatives of the SWRCB and RWQCB at any time during normal business hours. At the beginning of the post closure maintenance period, copies of these records shall be sent to the RWQCB.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172 and 13263, Water Code; Section 43103, Public Resources Code.

§21730. SWRCB - Public Participation. (C15: §2592)

(a) **Notification Of Interested Parties** — To ensure adequate public participation in any RWQCB proceeding relating to land disposal of wastes, the following persons and entities shall receive individual notice of any public hearing or board meeting either involving the classification of Units or involving the issuance or revision of WDRs for classified Units subject to this division:

- (1) the discharger and responsible public agencies;
- (2) news media serving the county as well as communities within five miles of the Unit;
- (3) citizens groups representing local residents;
- (4) environmental organizations in affected counties;
- (5) interested industrial organizations; and
- (6) for an MSW landfill at which a release has migrated beyond the facility boundary, any persons requiring notification pursuant to SWRCB Resolution No. 93 62 [see 40CFR258.55(g)(1)(iii)].

(b) **Notice Requirements** — Notice of hearings or meetings related to Units, or to discharges subject to this division, shall be given not less than 45 days before the meeting at which such actions will be taken, and copies of the agenda package shall be available not less than 30 days before the meeting. Nevertheless:

- (1) enforcement actions involving releases of hazardous wastes can be taken at meetings which comply only with the shorter (10-day) notice requirements of the California State Body Open Meetings Act; and
- (2) emergency actions [as described in §647.2(d) Government Code]] taken by the RWQCB are exempt from public participation and notice requirements.

(c) **Public Input Regarding a Proposed Corrective Action Program** — Regarding the adoption of corrective action measures for an MSW landfill, including any hearing preparatory to such adoption, the RWQCB shall meet the federal requirements incorporated by reference into SWRCB Resolution No. 93-62 [i.e., see §258.56(c & d) and §258.57 of 40CFR258].

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13260 and 13302, Water Code; Section 43103, Public Resources Code.

§21769. SWRCB - Closure and Post-Closure Maintenance Plan Requirements.

[C15: §2597 // T14: §17776, §17778(g), §18260, §18261.3(a)(2 & 7), §18262, §18263, §18264]

[Note: see also §21790 et seq.]

(a) **Scope, Applicability, & Purpose** — The SWRCB-promulgated sections in this subchapter set forth the requirements for the discharger's development and implementation of the preliminary and final closure and post-closure maintenance plans and for the RWQCB's review and approval of such plans. The SWRCB-promulgated sections of this Subchapter apply to all dischargers who own or operate a Class II or Class III Unit that is subject to the SWRCB-promulgated requirements of this subdivision. The purpose of such plans is to ensure that:

(1) **Performance Standards** — the discharger will close the Unit, and will maintain the Unit during the post-closure maintenance period, in a manner that achieves applicable performance standards under §20950(a)(2); and

(2) **Funding** — the discharger provides funds, through an acceptable financial mechanism, to achieve the goals of ¶(a)(1).

(b) **Preliminary Closure/Post-Closure Maintenance Plan.**

(1) **Purpose** — The preliminary closure and post-closure maintenance plan for a Unit shall provide a reasonable estimate of the maximum expected cost that would be incurred at any time during the Unit's projected life for a third party both to close the Unit and to carry out the first thirty years of post-closure maintenance, pursuant to all applicable SWRCB-promulgated requirements of this subdivision, including but not limited to the closure and post-closure requirements under Subchapter 5 of Chapter 3 (§20950 et seq.).

(2) **Contents** — For Units not jointly regulated by the RWQCB and the CIWMB/EA, this information shall be included as an integrated or separable [*e.g., separately bound*] part of the ROWD under §21710. For Units jointly regulated by both the RWQCB and the CIWMB/EA, this information shall be included as an integral or separable part of the JTD under §21585. At a minimum, the plan shall include:

(A) **Cost Analysis** — a lump sum estimate of the cost of carrying out all actions necessary to close the Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance, pursuant to all applicable SWRCB-promulgated requirements of Subchapter 5 of Chapter 3 (§20950 et seq.); and

(B) **Map** — a topographic map, drawn at appropriate scale and contour interval, and drawn to an appropriate level of detail, showing:

1. the boundaries of the Unit to be closed, including the proposed final limits of waste placement;
2. the boundaries of the facility; and
3. the boundaries of the waste received, if any, as of the date of the plan submittal;
4. the proposed final contours of the Unit and of its surrounding area; and
5. any changes in surface drainage patterns caused by the proposed final contours of the Unit and of its surrounding area, as compared to the preexisting natural drainage patterns.

(c) **Final Closure/Post-Closure Maintenance Plan.**

(1) **Purpose** — The purpose of the final closure and post-closure maintenance plan is:

(A) to provide, for review by the RWQCB, an accurate, detailed list and schedule of all actions necessary to close the Unit and to carry out post-closure maintenance in accordance with all applicable SWRCB-promulgated requirements of this subdivision, including but not limited to the closure and post-closure requirements under Subchapter 5 of Chapter 3 (§20950 et seq.);

(B) to provide, for review by the RWQCB, an accurate estimate of the cost of achieving each action listed in the plan; and

(C) upon the plan's being approved by the RWQCB, to provide an enforceable list and schedule of actions necessary for providing water quality protection at the Unit during the closure and post-closure maintenance periods.

(2) **Contents** — The final closure and post-closure maintenance plan for the Unit shall include at least the following information. For Units not jointly regulated by the RWQCB

and the CIWMB/EA, this information shall be included as an integrated or separable [e.g., separately bound] part of the ROWD under §21710. For Units jointly regulated by both the RWQCB and the CIWMB/EA, this information shall be included as an integral or separable part of the JTD under §21585. Minimum plan contents shall include:

(A) **Itemized Cost Analysis** — a detailed itemized listing of all actions, and their associated costs, necessary to close the Unit and to carry out the first thirty years of post-closure maintenance, pursuant to all applicable SWRCB-promulgated requirements of Subchapter 5 of Chapter 3 (§20950 et seq.);

(B) **Closure Schedule** — a proposed schedule for final closure including, where appropriate, for incremental closure (complete closure of successive portions of the landfill);

(C) **Final Treatment Procedures** — a description of any final treatment procedures which the discharger proposes to use for the wastes in each Unit, including methods for total removal and decontamination, if applicable. If the discharger is proposing alternative treatment or disposal procedures for particular Units (or, as appropriate, for the entire facility), the plan shall include a description of the alternatives;

(D) **Map** — a topographic map, drawn at appropriate scale and contour interval, and drawn to an appropriate level of detail, showing:

1. the boundaries of the Unit(s) to be closed and of the facility;
2. the projected final contours of the Unit and its surrounding area;
3. any changes in surface drainage patterns, as compared to the preexisting natural drainage patterns; and
4. the final limits of waste placement;

(E) **Changes To Description Under §21750** — a revised and updated submittal of any Unit characteristics of the closed Unit to the extent that they differ from the description provided by the discharger in the existing ROWD (under §21750);

(F) **Changes To Description Under §21760** — a description of the following aspects of the closed Unit, to the extent that they differ from the description provided by the discharger under the Design Report and Operations Plan submitted pursuant to §21760:

1. the design and the location of all features and systems which will provide waste containment during the post closure maintenance period;
2. the precipitation, drainage, and erosion control features;
3. the leachate control features and procedures at closed Units, including the design and operation of the LCRS;
4. a discussion, including a map, of ground water and unsaturated zone monitoring programs for the closure and post-closure maintenance periods, addressing the location, construction details, and rationale of all monitoring facilities;

(G) **MSW** — for MSW landfills only, all additional federal requirements incorporated by reference in SWRCB Resolution No. 93-62 for the protection of water quality [see §§258.60(c-j), and §§258.61(c)(3) and (e) of 40CFR258]; and

(H) **Land Use of Closed Unit** — the proposed post-closure land use of the disposal site and the surrounding area. If the Unit is to be used for purposes other than nonirrigated open space during the post closure maintenance period, the discharger shall submit a map showing all proposed structures, landscaping, and related features to be installed and maintained over the final landfill cover. This map shall be at a scale of 1" =

100', unless the RWQCB allows use of another scale that is more appropriate to a given Unit, and shall be accompanied by:

1. **Water Balance Analysis** — a description and quantification of water entering, leaving, and remaining on site from all sources to determine potential adverse impacts due to the proposed use, and corresponding mitigative design features and monitoring schemes that will ensure the physical and hydraulic integrity of the final cover in spite of the proposed post-closure land use;

2. **Water Penetration Detection Method** — detailed design plans and description(s) of the monitoring schemes, including any associated monitoring system(s), that will effectively detect penetration of the final cover by precipitation or applied irrigation waters; and

3. **Final Cover Protection** — for Units to be closed after July 18, 1997, a description of how the features described in ¶(c)(2)(H) will be installed, operated, and maintained in a manner that does not jeopardize the performance of the final cover [see §20950(a)(2)(A)].

(d) **Plan Review and Approval** — The RWQCB shall review and approve all preliminary and final closure and post-closure maintenance plans for all portions of the plans which are related to the protection of the waters of the state, including the associated CQA plan, for Class II Units and Class III landfills. For landfill Units jointly regulated by the RWQCB and the CIWMB/EA, the RWQCB's review and approval of preliminary and final closure and post-closure maintenance plans shall follow the same schedule as for the development or revision of WDRs (see PRC §43506). For landfills, the RWQCB shall review final closure and post-closure maintenance plans in coordination with the EA, pursuant to §21585(b & c).

NOTE: Authority cited: Section 1058, Water Code. Reference: Section 13360, Water Code, and Sections 43103, 43506, 43509, and 43601, Public Resources Code.

§22207. SWRCB - Closure Funding Requirements. [C15: §§2574(f&g) and 2580(f)]

The requirements of this section apply to dischargers who own or operate a Class II, or Class III waste management unit (**Unit**) or a mining waste management unit (**mining Unit**).

(a) **Unit Closure Funding** — At Class II and Class III Units for which the CIWMB does not require a closure fund, the RWQCB shall require the discharger to establish an irrevocable closure fund (or to provide other means) pursuant to the CIWMB-promulgated sections of this chapter but with the RWQCB named as beneficiary, to ensure closure of each classified Unit in accordance with an approved plan meeting all applicable SWRCB-promulgated requirements of this subdivision. For solid waste disposal sites, the RWQCB shall coordinate with the CIWMB, pursuant to §20950(f).

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13226, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§21860. CIWMB - Schedules for Review and Approval of Closure and Postclosure Maintenance Plans. (T14:§18271)

(a) The schedule for review and approval must conform to provisions of this section. An alternative schedule may be proposed by the operator provided it complies with applicable statute and the EA, RWQCB, and CIWMB concur.

(b) The CIWMB shall coordinate the review of the closure and postclosure maintenance plans unless, on an individual plan basis, the EA or RWQCB requests to be

the coordinating agency and the other reviewing agencies concur. The operator shall be notified in writing of the alternate coordinating agency. The coordinating agency shall coordinate all phases of the plan review and perform the duties as delineated in this section. The coordinating agency shall be responsible for coordinating the resolution of any conflicts among the reviewing agencies and to coordinate with the operator to facilitate approval of the plans.

(c) Within 30 days of receipt, closure and postclosure maintenance plans shall be deemed complete by default unless the RWQCB, the EA, or the CIWMB determines and informs the operator that the plan is incomplete pursuant to applicable CIWMB and SWRCB requirements. If determined to be incomplete, the EA, the RWQCB, and the CIWMB shall provide to each other and to the operator a list of specific items missing from the submittal.

(d) If the closure and postclosure maintenance plan is determined by the RWQCB, the EA, or the CIWMB to be incomplete, the operator shall resubmit revised closure and postclosure maintenance plan incorporating all items deemed to be missing from the prior submittal within 60 days following such determination, unless the EA, the RWQCB, and the CIWMB approve an alternate schedule.

(e) Within 120 days of receipt of complete closure and postclosure maintenance plans, the EA, RWQCB, and CIWMB shall complete a detailed review of the submittal, and the reviewing agencies shall submit their comments to the coordinating agency. The complete closure and postclosure maintenance plan shall be deemed approved by that agency unless, within the specified timeframes (120 days for a reviewing agency, 130-days for the coordinating agency), a reviewing or coordinating agency determines and informs the operator that the plans cannot be approved because of lack of compliance with applicable CIWMB or SWRCB requirements. Within 10 days of receipt of the comments, the coordinating agency shall compile all comments and forward them to the operator.

[Note: As required by Water Code sections 13263(f) and 13264(a) and (a)(2), unless concurring without comment, the RWQCB must also convey the rejection or acceptance of the proposal directly to the owner/operator by the end of the 120-day review period.]

(f) If the closure and postclosure maintenance plans are disapproved by the EA, the RWQCB, or the CIWMB, the operator shall resubmit a revised closure and postclosure maintenance plan that ensures compliance with applicable requirements, within 60 days following such determination, unless the EA, the RWQCB, and the CIWMB approve an alternate schedule.

(g) The procedures of subsections (e) and (f) shall be repeated until all comments by the EA, RWQCB, and CIWMB have been adequately addressed, except the review period specified in (e) shall be the greater of 60 days or the alternative schedule approved in (f), but in no case shall be more than 120 days.

(h) Within 10 days after determining that the closure and postclosure plans are in compliance with applicable requirements, the EA and the RWQCB shall inform the CIWMB by letter that they have approved the closure and postclosure maintenance plans. The RWQCB shall provide copies of any WDRs adopted or revised as a result of the review and approval process.

(i) Within 10 days of receipt of the approval letters from the EA and the RWQCB, the CIWMB shall determine if an approval letter for the plans can be issued by the CIWMB. The CIWMB shall not approve the plans if the CIWMB determines that the closure and

postclosure maintenance plans are not consistent with state minimum standards, inadequate due to substantive deficiencies in the plan or in the financial assurance mechanism, or the mechanism is not adequately funded for that point in the landfill's life.

(j) If the CIWMB does not approve closure and postclosure maintenance plans, it shall provide to the operator an explanation of its action and reasons for disapproval, and shall provide notice to the EA and the RWQCB.

NOTE: Authority cited: Section 40502, Public Resources Code; and Section 66796.22(d), Government Code. Reference: Sections 66796.22(b) and 66796.22(d), Government Code; and Sections 21080.5 and 43103, Public Resources Code.

§22190. SWRCB - Mandatory Closure (Cease and Desist Orders). (C15: §2593)

(a) **Source Control** — If the RWQCB finds that early closure of a waste management unit (**Unit**) is necessary to prevent (or curtail) violation of waste discharge requirements [e.g., as a source control measure in corrective action, under §20430(c)], it shall adopt a Cease and Desist Order, pursuant to §13302 of the Water Code, which requires closure according to a closure and post closure maintenance plan approved by the RWQCB.

(b) **New/Updated Plan** — Any time a Unit is subjected to early closure, under ¶(a), the discharger shall, in accordance with a schedule of compliance issued by the RWQCB, submit to the RWQCB a report including an appropriate closure and post closure maintenance plan (under §21769), if such a plan applicable to the early-closed configuration of the Unit was not submitted with the report of waste discharge and including a revised schedule for immediate termination of operations and closure.

NOTE: Authority cited: Section 1058, Water Code. Reference: Sections 13301 and 13304, Water Code; Section 43103, Public Resources Code.

§22207. SWRCB - Closure Funding Requirements. [C15: §§2574(f&g) and 2580(f)]

The requirements of this section apply to dischargers who own or operate a Class II, or Class III waste management unit (**Unit**) or a mining waste management unit (**mining Unit**).

(a) **Unit Closure Funding** — At Class II and Class III Units for which the CIWMB does not require a closure fund, the RWQCB shall require the discharger to establish an irrevocable closure fund (or to provide other means) pursuant to the CIWMB-promulgated sections of this chapter but with the RWQCB named as beneficiary, to ensure closure of each classified Unit in accordance with an approved plan meeting all applicable SWRCB-promulgated requirements of this subdivision. For solid waste disposal sites, the RWQCB shall coordinate with the CIWMB, pursuant to §20950(f).

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13226, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§22212. SWRCB - Post-Closure Funding Requirements. [C15: §§2574(f&g) and 2580(f)]

The requirements of this section apply to dischargers who own or operate a Class II or Class III waste management unit (**Unit**) or a mining waste management unit (**mining Unit**).

(a) **Non-Mining Units** — At Class II and Class III Units for which the CIWMB does not require a closure fund, the RWQCB shall require the discharger to establish an irrevocable fund (or to provide other means) pursuant to the CIWMB-promulgated sections of this chapter but with the RWQCB named as beneficiary, to ensure post

closure maintenance of each classified Unit in accordance with an approved plan meeting all applicable requirements of this subdivision. For solid waste landfills, the RWQCB shall coordinate with the CIWMB, pursuant to §20950(f).

(b) **Mining Units** — The discharger shall provide for adequate funding to pay for the costs of closure post closure maintenance at mining Units, as required by the mining regulations of Article 1, Subchapter 1, Chapter 7 of this division (§22470 et seq.). The discharger shall provide assurance of financial responsibility acceptable to the RWQCB. The RWQCB shall periodically review financial assurances for mining Units and shall modify the financial assurances as necessary to provide continued compliance with this section. If a lead agency acting under the authority of §2774(a) of the Public Resources Code requires assurances of financial responsibility for a mining Unit, these assurances can be used to fulfill the requirement under this paragraph, provided that:

(1) the RWQCB approves the assurance; and

(2) the RWQCB is named as alternate payee.

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13226, 13263, and 13267, Water Code; Section 43103, Public Resources Code.

§22222. SWRCB - Corrective Action Funding Requirements. [C15: §2550.0(b) and §2580(f)]

The requirements of this section apply to dischargers who own or operate a Class II or Class III waste management unit (**Unit**). This section does not apply to discharges of mining waste to mining waste management units (**mining Units**). *[Note: The requirements of this paragraph do not preclude the RWQCB (under authority other than this subdivision) from requiring financial assurance for a known or reasonably foreseeable release at a mining Unit.]* At Units for which the CIWMB does not require financial assurances for corrective action, the RWQCB shall require the discharger to establish an irrevocable fund (or to provide other means) pursuant to the CIWMB-promulgated sections of this chapter but with the RWQCB named as beneficiary, to ensure funds are available to address a known or reasonably foreseeable release from the Unit, pursuant to §20380(b). For addressing a known or reasonably foreseeable release at a solid waste landfill, the RWQCB shall coordinate with the CIWMB, pursuant to §20380(b) and in a manner consistent with §20950(f).

Note: Authority cited: Section 1058, Water Code. Reference: Sections 13172, 13226, 13263, and 13267, Water Code; Section 43103, Public Resources Code.